

TABLE OF CONTENTS

INTRODUCTION	1
BACKGROUND-1996 AIR QUALITY STRATEGIES TASK FORCE	4
AIR POLLUTANTS	5
TASK FORCE MEMBERSHIP	9
TASK FORCE RECOMMENDATIONS	11

Upgrades to the Vehicle Emissions Inspection Program

Introduction	18
Expansion of Area A Boundaries	20
Catalytic Converter Replacement	24
IM 240 Testing of Constant Four-Wheel Drive Vehicles	27
Improve Utilization of the Repair Grant Program	30
Increase the Repair Cap Cost for 1967-1974 Model Year Vehicles Registered in Area A	34
Remote Sensing Program Flexibility	36
Remote Sensing Identification of High-Emitting Pre-1967 Model Year Vehicles Operated In Area A	38
Remote Sensing Program Resources	40
Remote Sensing Non-Compliance Penalty/Re-registration Fee	43
Pilot Program for Roadside Testing of Diesel Vehicle with Snap Acceleration Test	46
Waiver Program "Gross Polluter" Measure	49
Implementation of Snap Acceleration Testing for Diesel Vehicles Registered in Area A	52
Making Vehicle Emissions Programs Self-supporting	54

Cleaner Burning Fuels

The Importance of Adopting a More Stringent Wintertime Gasoline Standard	64
Assessment of Urban Haze Benefit of Revised Fuel Standards	67
Option 1 - Adopt Wintertime Gasoline Standards: Cleaner Burning Gasoline (CBG) Type 1 with an Average Sulfur Content of 30 Parts per Million (G2)	68
Option 2 - Adopt Wintertime Gasoline Standards: Cleaner Burning Gasoline (CBG) Type 2 with the Current Wintertime Oxygenate and Reid Vapor Pressure (RVP) Requirements (G4)	72

Adopt Reformulated Fuel Standards: CARB Diesel (D7)	76
Table of Contents (continued)	

Measures to More Effectively Control Emissions from Mobile Sources and Gasoline and Diesel Engines

Introduction	82
Task Force on Transit	83
Encourage Private Industry to Provide Effective Programs and Incentives to Enhance Trip Reduction	86
Vanpool - Transportation Demand Management	89
Extension and Expansion of the Voluntary Lawn Mower and Lawn Equipment Replacement Program	91
Implementation of the California Low Emission Vehicle (CA LEV) Program in Arizona ..	94
Voluntary Vehicle Repair, Retrofit, and Recycle Program	101
Voluntary Program to Inventory and Evaluate Diesel Equipment and Identify Options for Upgrading/Replacement of Equipment	104
Tiered Incentives Program Based on Emissions Level of Alternative Fueled Vehicles	106
LEV Standard for Government Alternative Fueled Vehicles	109
Adoption of Alternative Fuel Vehicle Conversion Certification Standard	111

More Effective Control of Point Source Pollution

Introduction	113
Establishment of an Air Quality Credit Clearinghouse and Development of an Inter-source Emission Credit Trading and Banking Program	114
Assess Potential Emissions Reductions from Stationary Sources	117

More Effective Control of Area Source Pollution

Introduction	120
Voluntary Measure to Encourage Use of Temporary Electrical Power at Home Construction Sites	121
Additional Emission Reductions from Consumer Products	124
Strengthening and Better Enforcement of Maricopa County Rule 310	126
State Land Department Dust Abatement and Management Plan	130
Research on Targeted High Pollution Areas	133
Joint Review of 27 th Avenue and I-10 Area	135
Plan to Stabilize Unpaved Shoulders on Targeted Arterials	137
Crack Seal Equipment	140
Ban Leaf Blowers	142
Plan to Stabilize Targeted Unpaved Roads	144

Study The Use of Heavier Gasoline Delivery Trucks Within Arizona	147
Table of Contents (continued)	
Clean Burning Fireplace Construction	149
Require Applicants for City Grading and Draining Permits to Demonstrate They Have Obtained County Permits	152
Modify the Existing Solar Energy Tax Credit in ARS43-1083	154
PM ₁₀ Efficient Street Sweeping Test Program	156
 <i>Measures to Increase Public, Governmental, and Business Awareness of and Participation in Efforts to Reduce Urban Air Pollution</i>	
Introduction	158
Enhanced Year-round Clean Air Public Education Campaign	159
Clean Air 2000-Voluntary Business Community Emission Reductions	164
 <i>Other Control Measures</i>	
Update Ozone Nonattainment Modeling	166
Request the Appointment of a Governor's Task Force to Recommend Policies on Future Growth	168
Urge Governor to Take Steps to Resolve Questions Surrounding Issues of Tribal Sovereignty Related to Non-Attainment Status	172
 SOURCES AND EFFECTS OF AIR POLLUTION	174
 OTHER RECOMMENDED READING	183
 MEASURES NOT RECOMMENDED BY TASK FORCE	184
 <i>Measures to More Effectively Control Emissions from Mobile Sources and Gasoline and Diesel Engines</i>	
Bicycle Measures: Bicycle Facilities and Policies	184
Implementation of the National Low Emission Vehicle (NLEV) Program in Arizona	187
 <i>More Effective Control of Point Source Pollution</i>	193
Maricopa County Mutual Settlement Program	193
 <i>More Effective Control of Area Source Pollution</i>	196
Storage of Organic Liquids at Bulk Plants and Terminals	196
Transfer of Gasoline into Stationary Storage Dispensing Tanks	198

Dust Palliative Tax Incentive	200
-------------------------------------	-----

Table of Contents (continued)

LIST OF CONTROL MEASURES NOT RECOMMENDED BY THE SUBCOMMITTEE, AND NOT APPROVED BY THE TASK FORCE	202
---	------------

INTRODUCTION

The purpose of this report is to present recommendations developed by the Arizona Governor's 1997-98 Air Quality Strategies Task Force for protecting public health by improving air quality in the Phoenix metropolitan area and complying with the federal Clean Air Act.

Air quality issues are of significant importance to the citizens of Arizona. The Maricopa urbanized area does not meet federal health based standards for three pollutants: carbon monoxide (CO), ozone and particulates (PM₁₀). In addition, the area, as well as metropolitan Tucson, experiences unsightly urban haze, which reduces the quality of the human experience, as the views of nearby mountains in both areas are sometimes obscured. Home to the Grand Canyon, Arizona is a popular tourist destination, and a polluted Canyon, with its vistas limited by regional haze, is a disappointment to any visitor.

Arizonans are concerned about the effects of air pollution on their health and their quality of life. A Rocky Mountain Poll taken in January 1998, reported that 60% of those polled in metro Phoenix and 49% in metro Tucson blame air pollution for ailments, including minor breathing problems and burning eyes. While discussed in greater detail later in the chapter, Sources and Effects of Air Pollution, it should be noted that poor air quality affects the health of the infirm, whose problems may be exacerbated by elevated pollution levels, as well as healthy individuals, the elderly, children and pregnant women. Elevated pollution levels affect the performance of healthy exercising adults, and may restrict outdoor activities, especially for children.

This concern has been met over the years by vigorous efforts to address the air quality problems. Arizona was the second state in the nation to adopt centralized emissions inspection, which became mandatory in 1976. The program was progressively made more stringent over the years. Today, it is considered a model of stringency and customer convenience. Urbanized Maricopa County was the second area in the country to use oxygenated gasoline, beginning in 1989, and the second state, after California, to adopt a year-round fuels program to address all three pollutants. Numerous other control programs have been adopted to try to alleviate these problems.

This record of accomplishment has brought exceptional results. For example, in the late 1960s and early 1970s, carbon monoxide pollution reached unhealthful levels over two hundred days per year, while in 1997, no carbon monoxide violations were recorded. While minor improvements have occurred in reducing ozone and particulate violations, considerable progress is still necessary to achieve healthful air quality. Growth in population has had a significant effect on our ability to continue to progress. For example in 1970, less than one million people resided in Maricopa County. By 1980, over 1.5 million persons made Maricopa County their home. By 2000, there are expected to be nearly 3 million people in Maricopa County. The continued growth of the Metro Area counteracts the technological innovations that have been relied upon to reduce air pollution. Clearly, additional efforts will be necessary to achieve healthful air and restore the scenic beauty now obscured by the "brown cloud".

In order to address these air quality issues, Governor Jane Dee Hull issued Executive Order 97-12 on November 13, 1997, convening the Governor's 1997-1998 Air Quality Strategies Task Force (See Appendix A). The Task Force was charged with assisting in the development of plans to address the reclassification of the Maricopa County Nonattainment area from moderate to serious nonattainment status for CO, PM₁₀, and ozone, as decreed by the U.S. Environmental Protection Agency (EPA) pursuant to the Clean Air Act (CAA) Amendments of 1990.

The Task Force was composed of a diverse mixture of interests representing environmental, civic and health organizations, Arizona municipalities and legislators, and industries such as electric and gas companies, automobile manufactures, and oil industries. Public meetings held in accordance with the Executive Order followed strict protocol:

- # Agendas for were posted at least 24 hours in advance of each meeting;
- # Members of the public were allowed to participate in deliberations in each of the public meetings;
- # A call to the public was conducted at the end of each meeting; and
- # Minutes summarizing the events of each meeting were written and distributed at following meetings. These minutes are available at ADEQ upon request.

Representation on the 1997-1998 Task Force is as shown on the list included at the end of this section.

During the Task Force meeting on November 21, 1997, members agreed to form five Subcommittees (i.e., CO, PM₁₀, Ozone, Cleaner Burning Fuels, and Low Emission Vehicles) to focus on specific air pollution issues. Each Subcommittee was presented with proposed control measures and asked to determine each control measure's viability as a specific response to the causes of the air pollution problem. Throughout December and part of January, the Subcommittees considered approximately 100 suggestions by the general public, private businesses, and governmental entities. In addition, the Task Force collected a compendium of dozens of ozone, CO, and particulate control measures adopted by jurisdictions in every area of the country. Each subcommittee considered the relative cost and effectiveness of potential measures where such data were available. The Subcommittees also considered who might be impacted and whether the measures could be implemented through existing authority or would require legislative, regulatory, or other action.

On January 20, 1998, the Subcommittee chairpersons (except the Cleaner Burning Fuels Subcommittee) presented their respective recommendations to the full Task Force. Because their consultant's report to the Cleaner Burning Fuels Subcommittee could not be completed until January 23, 1998, that subcommittee did not complete deliberations until January 27, 1998. The Task Force considered each control measure recommended by the Subcommittees as well as other measures proposed by Task Force members during meetings held on January 26, 27, and 28, and February 2, 1998. Two public hearings were held on February 6, 1998, to receive oral comments on the draft measures and written comment were received

by ADEQ. All comments were summarized and provided to the Task Force which considered them at their meeting on February 9, 1998. The final Task Force report was adopted on February 17, 1998. In total, 40 public meetings were held by the Task Force and the associated Subcommittees during the time period from November 17, 1997, through February 17, 1998.

The Task Force recommended 47 control measures which are summarized in the table included at the end of the section. Copies of each of the control measures in their entirety are included in the section of the report titled, Task Force Recommendations.

BACKGROUND - 1996 AIR QUALITY STRATEGIES TASK FORCE

The work performed by the 1997-1998 Air Quality Strategies Task Force has been part of an ongoing effort to address air pollution within the Maricopa County area. In fact, this is the second time that an Air Quality Strategies Task Force has been established to review potential air quality control measures to reduce emissions of air pollutants.

An earlier Task Force was first convened by Governor Fife Symington at the beginning of summer 1996 to develop measures to prevent violations of the ozone standard during the 1996 ozone season. Subsequently the Task Force was asked to recommend measures to address the three pollutants for which Maricopa County had been declared in nonattainment. A report containing the measures was forwarded to then Governor Symington in December of 1996.

When the earlier Task Force published its 1996 report, the Maricopa County Nonattainment Area had been classified as a "serious" nonattainment area for both carbon monoxide (CO) and particulate matter (PM₁₀), and was in danger of being classified as a "serious" nonattainment area for ozone. Since then, the reclassification for ozone has taken effect. When the EPA failed to meet its May 15, 1997, deadline for initiating the reclassification process, the agency was sued to compel reclassification (*Ward and Aspegren v. Browner*). The resulting Consent Order required EPA to determine by October 27, 1997 if the area was to be reclassified. EPA determined that reclassification was required by the federal Clean Air Act. The effective date of the reclassification was December 8, 1997, with a December 8, 1998, deadline for submittal of a Serious Area Plan.

AIR POLLUTANTS

The Maricopa County area currently does not meet the EPA standards for three pollutants for which the EPA has established health-based standards: CO, PM₁₀, and ozone. The purpose of this section is to provide the reader with a brief overview of Arizona's obligations under the Clean Air Act to implement control measures that can limit the creation of ozone and reduce emissions of CO and PM. If effective controls are not implemented and attainment is not accomplished for any of the three criteria pollutants, the federal government will be obligated to intervene by promulgating federal implementation plans (FIPs) as well as institute a number of other measures.

Carbon Monoxide

The Maricopa County Carbon Monoxide Nonattainment Area was reclassified from "moderate" to "serious" by EPA on August 28, 1996. To demonstrate attainment, the federal Clean Air Act requires that a revised State Implementation Plan (SIP) be submitted to EPA by February 28, 1998. The SIP must demonstrate attainment by December 31, 2000, contain, among other things, transportation control measures to offset growth in vehicle miles traveled, and identify contingency measures that could be implemented if a violation of the eight-hour CO standard of 9 ppm is measured at any monitoring station during the period from January 1, 1999 through December 31, 2000.

Governments at various levels are committed to the implementation of numerous pollution control measures as part of the Serious Area CO SIP; however, air quality modeling conducted by MAG for the Serious Area SIP indicates that the existing measures are not sufficient to meet the CO standard by the Clean Air Act deadline. The magnitude of the additional control measures required to attain the standard may vary depending on the cutpoints (i.e. pass/fail standards) that will be set for the new test procedures in the vehicle emissions inspection program. If the most stringent cutpoints being considered were implemented, the modeled CO concentrations would be two percent short of attainment. If the least stringent cutpoints being considered were implemented, a seven percent shortfall would remain. In either case the Serious Area CO SIP should not be submitted until additional measures required to meet the standard have been adopted and all technical analyses and administrative procedures have been completed. The Serious Area CO SIP is scheduled to be submitted during the summer of 1998.

Particulate Matter

Because of measured violations of both the 24-hour and annual PM₁₀ standards in 1992 through 1994, the Maricopa County nonattainment area was reclassified from moderate to serious on June 10, 1996. This reclassification required that a new SIP be submitted to EPA by December 10, 1997. The new Serious

Area SIP must demonstrate attainment of both the 24-hour and annual PM₁₀ standard by December 31, 2001 (i.e. no violations of the PM₁₀ standards for 1998 through 2000).

Serious PM₁₀ nonattainment areas must meet the following requirements of the Clean Air Act:

- # Commit to implement Best Available Control Measures (BACM) by December 10, 1997;
- # Fully implemented BACM by June 10, 2000;
- # Reduce the major stationary source threshold changes from 100 tons per year to 70 tons per year; and
- # Submit and meet three year emission reduction targets (milestones). If these milestones are not met, then a new SIP revision is due in nine months, demonstrating how the shortfall in emissions reductions will be corrected.

Failure to attain the standard by the attainment date automatically requires the state to submit another SIP twelve months from the attainment date. The new SIP must reduce emissions by five percent annually until the standard is met.

Numerous pollution control measures were submitted to EPA by December 10, 1997, in the MAG report, Serious Area Committed Particulate Control Measures For PM₁₀ for the Maricopa County Nonattainment Area and Support Technical Analysis.

During preparation of the new SIP in the Fall of 1997, however, it became evident that it would not be possible to demonstrate attainment by December 31, 2001, and that an extension of the attainment deadline would need to be requested. Additional Clean Air Act requirements to obtain EPA approval for an extension include a demonstration that:

- # Attainment by December 31, 2001, is impracticable;
- # All requirements and commitments in the Serious Area Plan are being met;
- # The most stringent measures contained in the plan of any state or achieved in practice in any state, and that can feasibly be implemented in the area are adopted in the Plan; and
- # Attainment will be achieved as expeditiously as practicable, but no later than December 31, 2006.

MAG and the Task Force are committed to the development and submittal of a plan that meets all of the above requirements by the fall of 1998.

Ozone

Initially designated as a “moderate” nonattainment area, Phoenix was required to meet the ozone standard by November 15, 1996, i.e., a demonstration that no violations of the standard occurred in 1994, 1995, or 1996. The 1993 and 1994 SIP revisions submitted to the EPA in 1993 and 1994 narrowly forecasted attainment by 1996. However, multiple violations occurred in 1994 and 1995. Concerned about the potential for reclassification of the area to “serious”, ADEQ and EPA had agreed to the submittal by Arizona of a Voluntary Early Ozone Plan (VEOP). The VEOP, based largely on legislation enacted in the 1997 Legislative Session and reflecting work of the prior Air Quality Strategies Task Force, was designed to identify control measures that would reduce ozone concentrations at least as fast as would occur if the area were formally redesignated as a serious nonattainment area but without imposing the economic burdens of a formal reclassification. The VEOP, however, did not demonstrate attainment, and in fact showed that attainment by 1999 was impossible. Concerns were also raised about potential anomalies in the air quality modeling (the mathematical, three-dimensional simulation of a particular ozone episode) that was relied upon in the VEOP. As a result ADEQ commissioned an independent technical peer review of the VEOP modeling to recommend improvements. Additional work was conducted to address the original concerns identified in the Draft VEOP, to address the questions that were raised in an April 1997 status report, to implement recommendations from the technical review, and to make improvements to the modeling. This work, the Reanalysis of the Metropolitan Phoenix Voluntary Early Ozone Plan (VEOP) (hereinafter referred to as the REOP), was completed in October 1997.

The Clean Air Act allows nonattainment areas to request a one-year extension of the attainment deadline for ozone, provided that the area complied with all requirements and commitments in the applicable SIP and experienced no more than one exceedence of the NAAQS in the area during the attainment demonstration year, i.e., 1996. Based upon the submittal of the 1993 and 1994 ozone plans and the VEOP, ADEQ had concluded that the area had met the first requirement. An examination of the air quality data for 1996 revealed that, while 10 exceedences had been recorded, only one had been recorded at an official network monitoring site thus leading ADEQ to conclude that the second criterion had been met. As a result, on May 2, 1997, ADEQ submitted to EPA a request for a one-year extension of the moderate area attainment deadline.

The Act set a deadline of May 15, 1997, for EPA to determine whether the Maricopa Nonattainment Area had attained the one-hour ozone standard by November 15, 1996, and if not, to reclassify the area from moderate to serious. EPA had not made its determination by that date. A lawsuit, however, forced EPA to determine whether the area had attained the standard, publish the determination in the Federal Register, and if the area had not achieved the standard, reclassify it from moderate to serious. On August 25, 1997, EPA proposed to find that the area had not attained the standard by the deadline, to reclassify the area to serious and to deny the extension request. EPA also proposed that the area submit a serious area plan by December 1998, to demonstrate attainment by the November 15, 1999, serious area deadline. In

response, the State prepared comments objecting to the reclassification and opposing the denial of the extension request. EPA issued a final notice on December 8, 1997 reclassifying the area to serious.

With the reclassification to serious, the Maricopa County Nonattainment Area faces a host of new regulatory burdens. Of principal concern is the impact of the change in the major source and major modification thresholds, and their potential to cause inequitable burdens on industrial sources, which collectively contribute less than five percent to area VOC emissions. These additional requirements could result in:

- # Disincentives to manufacturing plant expansion and the construction of new plants;
- # Greater difficulty in building or improving transportation infrastructure projects; and
- # A greater overall cost of doing business in the County.

A detailed discussion of the sources and effects of these pollutants is contained at the end of this report.

TASK FORCE MEMBERSHIP

Mr. Roger Ferland (Co-Chairman)
Streich Lang, P.A.

Mr. Richard Hayslip (Co-Chairman)
Salt River Project

The Honorable Carolyn Allen
Arizona House of Representatives

The Honorable Russell Bowers
Arizona State Senate

The Honorable Chris Cummiskey
Arizona State Senate

The Honorable Mike Gardner
Arizona House of Representatives

The Honorable Linda Gray
Arizona House of Representatives

The Honorable Art Hamilton
Arizona House of Representatives

The Honorable John Kaite
Arizona State Senate

The Honorable Mark Spitzer
Arizona State Senate

Ms. Amy R. Porter (Chairwoman, Ozone Subcomm.)
Lewis and Roca
Representing Arizona Chamber of Commerce

The Honorable Elaine M. Scruggs (Chairwoman, PM
Subcomm.)
Mayor of Glendale
Chairman of the MAG Regional Council

Mr. Jim Walsh (Chairman, LEV Subcomm.)

Ms. Anne Wendell (Chairwoman, Fuels Subcomm.)
Director of Government Relations, Motorola

Mr. William Wiley (Chairman, CO Subcomm.)
Environmental Policy Advisor
Arizona Public Service

Mr. Christopher J. Andrews
Arizona Association of Industries

Mr. Samuel Aubrey
Assistant Director
Arizona Rock Products Association

Dr. Gerald Barnes
General Motors
Representing American Automobile Manufacturers
Association

Mr. David Berry
Swift Transportation

Ms. Sandy Black
Intel, Valley Forward

Mr. Al Brown
Environmental Services Department Director
Maricopa County

Ms. Barbara Burkholder
Director
Arizona Public Health Association

Mr. Jim M. Bush
Fennimore Craig
Representing ARCO

Ms. Samantha Fearn
National Federation of Independent Business

Mr. Richard Foreman
Public Affairs Manager
Southwest Gas

Mr. James Klinker
Arizona Farm Bureau

Mr. David Martin, Director
Arizona Chapter, Associated General Contractors

Mr. Chuck Morgan
Manager of Environmental Affairs
Mobil Oil Corporation

Ms. Mary Peters, Deputy Director
ADOT

Mr. Bill Pfeifer
Executive Director
American Lung Association of Arizona

Mr. Charles T. Stevens
Stevens & Leibow
Representing Western States Petroleum Association

Ms. Connie Wilhelm
Arizona Home Builders Assoc.

TASK FORCE RECOMMENDATIONS

The purpose of this section is to present each of the control measures recommended by the 1997-98 Arizona Governor's Air Quality Strategies Task Force. The measures are grouped into the following categories:

- # Upgrades to the Vehicle Emissions Inspection Program
- # Cleaner Burning Fuels
- # Measures to More Effectively Control Emissions from Mobile Sources and Gasoline and Diesel Engines
- # More Effective Control of Point Source Pollution
- # More Effective Control of Area Source Pollution
- # Measures to Increase Public, Governmental, and Business Awareness of and Participation in Efforts to Reduce Urban Air Pollution
- # Other Control Measures

The measures described under each of the categories are separated by colored dividers for easier reference.

The table that precedes the full text of the measures provides a summary of all of the Task Force recommendations. The summary table is not designed to replace the full text of the measures, and should not be used to do so.

Measure	Page #	Implementation Mechanism	Entity Responsible for Implementation	CO Emissions Reduction	VOCs Emissions Reduction	NO _x Emissions Reduction	PM Emissions Reduction	Benefit for Urban Haze (i.e., Brown Cloud)	Funding Source			
									Appropriation (1)	Tax Credits (2)	Private (3)	Other Public (4)
Expansion of Area A Boundaries	20	# Amend ARS 49-541.1 and 41-2121.1	State (AZ)	0.8% - 1999 1.1% - 2010	0.4% - 1999 0.7% - 2010	Yes	Yes	Yes	Would increase cost to operate applicable programs		Increased cost of compliance for citizens/ businesses in newly affected areas	
Catalytic Converter Replacement	24	# Strike ARS 49-542(R)(1) # Revise ARS §49-542(S) # Rulemaking	ADEQ	72.5% for each failing vehicle		55.7% for each failing vehicle	Yes	Yes	\$112,000 total capital cost plus software modification cost		Motorists’ cost of catalytic converter replacement	
IM 240 Testing of Constant Four-Wheel Drive Vehicles	27	# Revise ARS 849-542.F.3 # Rulemaking # Contract Amendment	ADEQ and Emissions Testing Contractor	56% average for each failing vehicle	54% average for each failing vehicle	Yes	Yes	Yes	\$0.15 per vehicle fleet-wide or an additional \$9.01 per affected vehicle		Higher emission test fees	
Improve Utilization of the Repair Grant Program	30	# Rulemaking # RFI & RFP # Qualified repair facilities	ADEQ	Yes ⁽⁷⁾	Yes ⁽⁷⁾	Yes for IM240 vehicles	Yes ⁽⁷⁾	Yes ⁽⁷⁾	\$173,847 1st year; \$143,847 recurring. Cost effectiveness depends on participation rate		Reduced compliance cost for participating motorists	
Increase the Repair Cap Cost for 1967-1974 Model Year Vehicles Registered in Area A	34	# Revise ARS §49-542.L.1 # Rulemaking	ADEQ	Yes	Yes		Yes	Yes			Up to \$200 increase in repair costs per affected vehicle	
Remote Sensing Program Flexibility	36	# Revise ARS 49-542.01 # Contract Amendment	ADEQ	Yes	Yes	Yes for IM240 vehicles	Yes	Yes	Revenue neutral		Testing and repair costs for additional high emitters cited	
Remote Sensing Identification of High-Emitting pre-1967 Model Year Vehicles Operated in Area A	38	# Revise ARS §49-542.J.2(a) # Rulemaking # Contract Amendments	ADEQ, Remote Sensing Contractor and MVD	Yes	Yes		Yes	Yes	Additional administrative cost		Testing and repair costs for additional high emitters cited	
Remote Sensing Program Resources	40	# Legislative # Contract Amendment	ADEQ	Yes	Yes	Yes, for IM240 vehicles	Yes	Yes	Unknown			

Notes

- (1)Costs reflect a direct appropriation of state funds or a conversion of existing resources.
- (2)Costs reflect foregone revenue.
- (3)Costs reflect direct, out-of-pocket expenses borne by private citizens (e.g., fee increases) or industry (e.g., cost of compliance).
- (4)Costs assigned to public entities other than the state (e.g., cities, counties).
- (5)Emission reductions based on formulations certified to average properties.
- (6)\$5,000 per metric ton aggregated across all pollutants.
- (7)Amount cannot be determined until the measure is implemented.

DRAFT
REPORT OF THE ARIZONA GOVERNOR’S
AIR QUALITY STRATEGIES TASK FORCE
Comprehensive List of Task Force Recommendations

*Note: This table is intended as a summary and reference guide only.
It should not be used as a substitute for the full text included in the report*

Measure	Page #	Implementation Mechanism	Entity Responsible for Implementation	CO Emissions Reduction	VOCs Emissions Reduction	NO _x Emissions Reduction	PM Emissions Reduction	Benefit for Urban Haze (i.e., Brown Cloud)	Funding Source			
									Appropriation (1)	Tax Credits (2)	Private (3)	Other Public (4)
Remote Sensing Non-Compliance Penalty/Re-Registration Fee	43	# Revise Remote Sensing Statute ARS §49-542.01 # Rulemaking	MVD	Yes	Yes	Yes, for IM240 vehicles	Yes	Yes	Additional administrative cost		Potential \$100 civil penalty	
Pilot Program for Roadside Testing of Diesel Vehicle with Snap Acceleration Test	46	Legislative	ADEQ and cooperating agencies						\$120,000 (\$70,000 of which is shared with Remote Sensing)			
Waiver Program “Gross Polluter” Option as a Potential Control Measure	49	# Revise ARS §49-542 # Legislative Rulemaking # Contract Amendment	ADEQ and Emissions Testing Contractor	Yes	Yes	Yes	Yes	Yes			Potential increased repair cost for affected vehicles	
Implementation of Snap Acceleration Testing for Diesel Vehicles Registered in Area A	52	# Revise ARS §49-543 # Rulemaking (in process) # Contract Amendment	ADEQ and Emissions Testing Contractor	Yes	Yes		Yes	Yes	\$160,000		Potential increased repair cost for affected vehicles	
Making Vehicle Emissions Programs Self-Supporting	54	Revise ARS §49-543	ADEQ						May reduce or eliminate \$6.7 million of VEI appropriation		Former appropriation costs would be borne by Area A and B motorists	
Option 1 - Adopt Wintertime Gasoline Standards: Cleaner Burning Gasoline (CBG) Type 1 with an Average Sulfur Content of 30 Parts per Million (G2)	68	# Revise ARS Title 41, Ch. 15, Article 6 # Rulemaking # Acquire EPA Waiver	ADEQ and Arizona Department of Weights and Measures (ADWM)	19.7 mt per day -2001 16.6 mt per day - 2010			2.0 mt per day - 2004 2.2 mt per day - 2010	0.68% - 2004			4.6¢ per gal total incremental production cost; .2¢ per gal mileage penalty; cost effectiveness of \$9,000 per mt of CO reduction	
Option 2 - Adopt Wintertime Gasoline Standards: Cleaner Burning Gasoline (CBG) Type 2 with the Current Wintertime Oxygenate and Reid Vapor Pressure (RVP) Requirements (G4)	72	# Revise ARS Title 41, Ch. 15, Article 6 # Rulemaking # Acquire EPA Waiver	ADEQ and ADWM	32.7 mt per day - 2001 28.3 mt per day - 2010			2.1 mt per day - 2004 2.3 mt per day - 2010	0.81% - 2004			7.6¢ per gal total incremental production cost; .7¢ per gal mileage penalty; cost effectiveness of \$9,000 per mt of CO reduction	

Notes

- (1)Costs reflect a direct appropriation of state funds or a conversion of existing resources.
- (2)Costs reflect foregone revenue.
- (3)Costs reflect direct, out-of-pocket expenses borne by private citizens (e.g., fee increases) or industry (e.g., cost of compliance).
- (4)Costs assigned to public entities other than the state (e.g., cities, counties).
- (5)Emission reductions based on formulations certified to average properties.
- (6)\$5,000 per metric ton aggregated across all pollutants.
- (7)Amount cannot be determined until the measure is implemented.

DRAFT
REPORT OF THE ARIZONA GOVERNOR’S
AIR QUALITY STRATEGIES TASK FORCE
Comprehensive List of Task Force Recommendations

Note: This table is intended as a summary and reference guide only. It should not be used as a substitute for the full text included in the report

Measure	Page #	Implementation Mechanism	Entity Responsible for Implementation	CO Emissions Reduction	VOCs Emissions Reduction	NO _x Emissions Reduction	PM Emissions Reduction	Benefit for Urban Haze (i.e., Brown Cloud)	Funding Source			
									Appropriation (1)	Tax Credits (2)	Private (3)	Other Public (4)
Adopt Reformulated Fuel Standards: CARB Diesel (D7)(5)	76	# Revise ARS Title 41, Ch. 15, Article 3 # Rulemaking # Acquire EPA Waiver	ADEQ and ADWM	<u>WINTER</u> 9.2 mt per day - 2001 11.3 mt per day - 2010 <u>SUMMER</u> 25.7 mt per day - 1999 39.7 mt per day - 2010	<u>WINTER</u> 4.3 mt per day - 2001 5.2 mt per day - 2010 <u>SUMMER</u> 7.1 mt per day - 1999 10.1 mt per day - 2010	<u>WINTER</u> 3.8 mt per day - 2001 4.1 mt per day - 2010 <u>SUMMER</u> 6.5 mt per day - 1999 7.9 mt per day - 2010	<u>WINTER</u> 1.4 mt per day - 2001 1.8 mt per day - 2010 <u>SUMMER</u> 1.4 mt per day - 1999 1.8 mt per day - 2010	0.94% - 2004			4.0¢ per gal total incremental production cost; 1.1¢ per gal mileage penalty; see note (6) regarding cost effectiveness	
Task Force on Transit	83	Executive Order	Governor’ s Office						\$200,000			
Encourage Private Industry to Provide Effective Programs and Incentives to Enhance Trip Reduction	86	State Tax Code Amendment	Department of Revenue	Yes	Yes	Yes	Yes	Yes		Up to 900,000 first year		
Vanpool—Transportation Demand Management	89	Legislative Appropriation	RPTA	Yes	Yes	Yes	Yes	Yes	\$500,000 annually			
Extension and Expansion of the Voluntary Lawn Mower and Lawn Equipment Replacement Program	91	# Legislative	Maricopa and Pima Counties	0.66 tons per day in Area A	2.86 tons per day in Area A		Yes	Yes	\$1,000,000 annually; cost effectiveness of \$3,964 per ton CO reduction and \$1,227 per ton VOC reduction			
Implementation of the California Low Emission Vehicle (CA LEV) Program in Arizona	94	# Legislative # Rulemaking # Acquire EPA Waiver	ADEQ	95.0 per day 9.1% - 2005 363.1 per day 38% - 2015	4.3 per day 5.1-5.3% - 2005 20.1 per day 30% - 2015	9.4 per day 6.1% - 2005 48.7 per day 29.35 - 2015	Yes	Yes	\$100,000 annually		Up to \$315 per vehicle	
Voluntary Vehicle Repair, Retrofit, and Recycle Program	101	# Legislative # County Rulemaking	Maricopa County	3.24 metric tons per day	Yes	Yes	Yes	Yes	\$4,000,000; cost effectiveness of \$1,706 per metric ton CO reduction		Possible cost share for repair and/or recycle	Admin. Costs
Voluntary Program to Inventory and Evaluate Diesel Equipment and Identify Options for Upgrading/Replacement of Equipment	104	# Coordinate with ADEQ and Clean Air 2000 participants	ADEQ	Yes	Yes	Yes	Yes	Yes			Cost of accelerated diesel equipment replacement	

Notes

- (1)Costs reflect a direct appropriation of state funds or a conversion of existing resources.
- (2)Costs reflect foregone revenue.
- (3)Costs reflect direct, out-of-pocket expenses borne by private citizens (e.g., fee increases) or industry (e.g., cost of compliance).
- (4)Costs assigned to public entities other than the state (e.g., cities, counties).
- (5)Emission reductions based on formulations certified to average properties.
- (6)\$5,000 per metric ton aggregated across all pollutants.
- (7)Amount cannot be determined until the measure is implemented.

DRAFT

REPORT OF THE ARIZONA GOVERNOR’S

AIR QUALITY STRATEGIES TASK FORCE

Comprehensive List of Task Force Recommendations

Note: This table is intended as a summary and reference guide only. It should not be used as a substitute for the full text included in the report

Measure	Page #	Implementation Mechanism	Entity Responsible for Implementation	CO Emissions Reduction	VOCs Emissions Reduction	NO _x Emissions Reduction	PM Emissions Reduction	Benefit for Urban Haze (i.e., Brown Cloud)	Funding Source			
									Appropriation (1)	Tax Credits (2)	Private (3)	Other Public (4)
Tiered Incentives Program Based on Emissions Level of AFVs	106	# Revise ARS 43-1086, 43-1174, 49-474.01	Departments of Revenue and Commerce	Yes	Yes	Yes	Yes	Yes		Undefined restructure of existing \$1,000 tax credit		Admin. Costs
LEV Standard for Government Alternative Fueled Vehicles	109	# Revise ARS 9-500.04, 15-349, 41-803, and 41-1516	Departments of Commerce and Administration, Area A cities, towns, school districts, and Maricopa County	Yes	Yes	Yes	Yes	Yes				Potential incremental vehicle cost increase
Adoption of Alternative Fuel Vehicle Conversion Certification Standard	111	Amend ARS 41-1516	Department of Commerce	Yes	Yes	Yes	Yes	Yes				Potential incremental vehicle cost increase
Establishment of an Air Quality Credit Clearinghouse and Development of an Inter-source Emission Credit Trading and Banking Program	114	# Select Contractor # Stakeholder Process for Rulemaking	ADEQ						\$150,000		Potential reduction in compliance costs	Admin. Costs
Assess Potential Emissions Reductions from Stationary Sources	117	# Internal Analysis # Rulemaking	Maricopa County		Yes						Potential increase in compliance costs	Admin. Costs
Voluntary Measure to Encourage Use of Temporary Electrical Power at Home Construction Sites	121	# Contractor Education # Executive Branch if mandated after Jan. 1, 2000	Homebuilders Association of Central Arizona and Utilities	1,292 tons per year	29.3 tons per year		1.2 tons per year				Up to \$100 per home based on 4,500 homes per year; cost effectiveness \$348 for CO, \$15,360 for VOCs, \$374,000 for PM ₁₀	
Additional Emission Reductions from Consumer Products	124	# Revise statute # Rulemaking	Maricopa County		1 ton per day 5%				\$95,000 - 110,000; cost effectiveness \$1,598 for VOCs			
Strengthening and Better Enforcement of Rule 310	126	# Rulemaking # Public Education	Maricopa County				3,100 tons per year 7.72 tons per day	Yes			Compliance Costs	\$600,000; cost effectiveness \$231 for PM ₁₀

Notes

- (1)Costs reflect a direct appropriation of state funds or a conversion of existing resources.
- (2)Costs reflect foregone revenue.
- (3)Costs reflect direct, out-of-pocket expenses borne by private citizens (e.g., fee increases) or industry (e.g., cost of compliance).
- (4)Costs assigned to public entities other than the state (e.g., cities, counties).
- (5)Emission reductions based on formulations certified to average properties.
- (6)\$5,000 per metric ton aggregated across all pollutants.
- (7)Amount cannot be determined until the measure is implemented.

DRAFT
REPORT OF THE ARIZONA GOVERNOR’S
AIR QUALITY STRATEGIES TASK FORCE
Comprehensive List of Task Force Recommendations

Note: This table is intended as a summary and reference guide only. It should not be used as a substitute for the full text included in the report

Measure	Page #	Implementation Mechanism	Entity Responsible for Implementation	CO Emissions Reduction	VOCs Emissions Reduction	NO _x Emissions Reduction	PM Emissions Reduction	Benefit for Urban Haze (i.e., Brown Cloud)	Funding Source			
									Appropriation (1)	Tax Credits (2)	Private (3)	Other Public (4)
State Land Department Dust Abatement and Management Plan	130	# Legislative	Arizona State Land Department				1.55 tons per day	Yes	\$203,212 1st year, \$43,509 recurring; cost effectiveness \$430-800 for PM ₁₀		Private costs of compliance	
Research on Targeted High Pollution Areas	133	Consultant Contract	ADEQ and Maricopa County				Identify effective measures		\$300,000			Team Partic.
Joint Review of 27th Avenue and I-10 Area	135	ADOT Project	ADOT				Identify effective measures					Funded by ADOT
Stabilize Unpaved Shoulders on Targeted Arterials	137	MAG Coordination	MAG, ADOT, cities, towns, and Maricopa County				Yes	Yes				\$3,000 - 17,000 per mile
Crack Seal Equipment	140	# Legislative # County Rulemaking	Maricopa County, ADOT, cities, and towns				0.025 per day	Yes				Equipment replacement; cost effectiveness \$114 per ton PM ₁₀ reduced
Ban Leaf Blowers	142	# Legislative # County Rulemaking	Maricopa County	Yes	Yes		1,500 tons per year, 3.74 tons per day	Yes			15-30% landscape cost increase; cost effectiveness \$180 per ton PM ₁₀ reduced	
Stabilize Targeted Unpaved Roads	144	# Legislative # MAG Coordination	MAG, ADOT, cities, towns, and Maricopa County				Yes	Yes				\$3,000-20,000 per mile
Study the Use of Heavier Gasoline Delivery Trucks within Arizona	147	ADOT Project	ADOT						Possible Consultant Contract			
Clean Burning Fireplace Construction	149	# Legislative	Maricopa County, cities, and towns	Yes			Yes	Yes		\$500 per unit converted	\$800 -\$4000 per new unit	
Require Applicants for City Grading and Drainage Permits to Demonstrate they have Obtained County Permits	152	Prepare a Uniform Model Ordinance for Adoption by Local Governments	Cities and towns				Yes	Yes			Cost of compliance	Admin. Costs

Notes

- (1)Costs reflect a direct appropriation of state funds or a conversion of existing resources.
- (2)Costs reflect foregone revenue.
- (3)Costs reflect direct, out-of-pocket expenses borne by private citizens (e.g., fee increases) or industry (e.g., cost of compliance).
- (4)Costs assigned to public entities other than the state (e.g., cities, counties).
- (5)Emission reductions based on formulations certified to average properties.
- (6)\$5,000 per metric ton aggregated across all pollutants.
- (7)Amount cannot be determined until the measure is implemented.

DRAFT
REPORT OF THE ARIZONA GOVERNOR’S
AIR QUALITY STRATEGIES TASK FORCE
Comprehensive List of Task Force Recommendations

Note: This table is intended as a summary and reference guide only. It should not be used as a substitute for the full text included in the report

Measure	Page #	Implementation Mechanism	Entity Responsible for Implementation	CO Emissions Reduction	VOCs Emissions Reduction	NO _x Emissions Reduction	PM Emissions Reduction	Benefit for Urban Haze (i.e., Brown Cloud)	Funding Source			
									Appropriation (1)	Tax Credits (2)	Private (3)	Other Public (4)
Modify the Existing Solar Energy Tax Credit in ARS 43-1083	154	# Revise ARS §43-1083	Department of Revenue	Yes		Yes	Yes	Yes		Up to \$1,000 per unit	Cost of retrofit	
PM ₁₀ Efficient Street Sweeping Test Program	156	MAG Coordination	MAG, cities, towns, and ADOT									\$70,000 consultant contract
Enhanced Year-Round Clean Air Public Education Campaign	159	# Legislative # ADEQ Coordination	Clean Air Advisory Committee	TPD			TPD		\$1,800,000 per year through 2000		In-kind contributions	
Clean Air 2000 - Voluntary Business Community Emission Reductions	164	Public/Private Partnership	Clean Air 2000 Sponsors and Participants	Yes	Yes	Yes	Yes	Yes			Voluntary funding by program sponsors and participants	
Update Ozone Nonattainment Modeling	166	# Legislative # Consultant Contracts	ADEQ, Maricopa County, and Consultant						\$250,000			
Request the Appointment of a Governor's Task Force to Recommend Policies on Future Growth	168	Executive Order	Governor's Office									
Urge Governor to Take Steps to Resolve Questions Surrounding Issues of Tribal Sovereignty Related to Non-Attainment Status	172	Include in Air Quality Strategies Task Force Final Report	Task Force									

Notes

- (1)Costs reflect a direct appropriation of state funds or a conversion of existing resources.
- (2)Costs reflect foregone revenue.
- (3)Costs reflect direct, out-of-pocket expenses borne by private citizens (e.g., fee increases) or industry (e.g., cost of compliance).
- (4)Costs assigned to public entities other than the state (e.g., cities, counties).
- (5)Emission reductions based on formulations certified to average properties.
- (6)\$5,000 per metric ton aggregated across all pollutants.
- (7)Amount cannot be determined until the measure is implemented.

DRAFT
REPORT OF THE ARIZONA GOVERNOR'S
AIR QUALITY STRATEGIES TASK FORCE
Comprehensive List of Task Force Recommendations

*Note: This table is intended as a summary and reference guide only.
It should not be used as a substitute for the full text included in the report*

INTRODUCTION

Mandatory vehicle emissions inspection has been in place in the Maricopa Nonattainment Area since 1976. The program is considered a model for the nation due to continued improvements in effectiveness, while minimizing motorist inconvenience and cost. In 1995, Arizona began Enhanced Emissions Inspection for 1981 and newer model year vehicles registered in or used to commute into the Maricopa Nonattainment Area. Enhanced Emissions Inspection includes the following components:

- # IM 240 is a transient, loaded-mode emissions test. Total vehicle emissions are measured during a simulated urban driving cycle, while the vehicle is operated at varying loads on a dynamometer, in a test procedure that is up to 240 seconds in length.
- # Evaporative emissions from vehicle fuel systems are also checked. Arizona uses a pressure test to check for leaks in the fuel system from the gas cap through the gas tank to the evaporative emissions canister, which traps gasoline vapors from the tank. A visual inspection looks for defects in the fuel system from the tank to the engine.

Arizona adopted Enhanced Emissions Inspection as part of its efforts to reduce CO and ozone pollution.

- # This form of a test is better able to accurately fail problem cars and pass clean cars, improving vehicle emissions. Idle and simple loaded tests, like those performed on 1980 and older vehicles, are adequate for those vehicle types, which are typically equipped with carburetors and lack computer controls. The simpler tests typically reveal problems related to air/fuel mixture, timing, and other readily identified defects. Today's cars, with sensors and computers, are much more complex, and need to be tested in a variety of driving modes, including acceleration and deceleration, in order to detect excessive emissions occurring in actual on-road use. Enhanced Emissions Inspection is a high tech test for today's high tech cars, and is a shorter version of the test used by manufacturers to demonstrate that new vehicles meet tailpipe standards.
- # Leaky fuel systems account for up to two thirds of total vehicle emissions of VOCs, which contribute to ozone pollution. Enhanced Emissions Inspection makes the testing of these systems possible.

Because Enhanced Emissions Inspection is highly accurate, the causes of emissions failure must be properly repaired in order for a failing vehicle to pass a subsequent test. With idle and simple loaded tests, it is possible to fix a car to pass the test, while not addressing the true cause of high emissions.

- # Thorough repairs of vehicle malfunctions identified by Enhanced Inspection allow the test to be run every other year (i.e., biennially), reducing hassles for motorists.

- # Enhanced Inspection is extremely cost effective. Nationally it is estimated that the cost of reducing both CO and VOC/hydrocarbon emissions through implementation of an Enhanced Inspection Program is \$1,600/ton.
- # Enhanced Inspection was found to be the single most effective measure to reduce CO and ozone pollution in the development of the 1993 Plans for those pollutants.

Based on these factors, the Task Force supports the 13 measures presented on the following pages to both maintain the program and further improve its effectiveness.

- # Expansion of Area A Boundaries
- # Catalytic Converter Replacement
- # IM 240 Testing of Constant Four-Wheel Drive Vehicles
- # Improve Utilization of the Repair Grant Program
- # Increase the Repair Cap Cost for 1967-74 Model Year Vehicles Registered in Area A
- # Remote Sensing Program Flexibility
- # Remote Sensing Identification of High-Emitting Pre-1967 Model Year Vehicles Operated in Area A
- # Remote Sensing Program Resources
- # Remote Sensing Non-Compliance Penalty/Re-Registration Fee
- # Pilot Program for Roadside Testing of Diesel Vehicle with Snap Acceleration Test
- # Waiver Program "Gross Polluter" Option as a Potential Control Measure
- # Implementation of Snap Acceleration Testing for Diesel Vehicles Registered in Area A
- # Making Vehicle Emissions Programs Self-Supporting

Expansion of Area A Boundaries

This measure applies to the following pollutants: VOCs, NO_x, CO, PM₁₀, HAPs, Urban Haze

Background and Description of Measure

The boundaries for several of the most important air pollution control programs for CO, ozone, and PM₁₀ are confined by Arizona statute and local ordinance to the metropolitan Phoenix area within Maricopa County, which Title 49 of Arizona Revised Statutes (ARS) calls “Area A” (see Figure 1). Programs applicable to Area A in Title 49 include the Vehicle Emissions Inspection Program, Trip Reduction Program (TRP), and wintertime fireplace restrictions. In ARS § 41-2121, the term “Area A” is used to mean all of Maricopa County, for purposes of designating the area of applicability for Cleaner vehicle fuels specifications. While the nonattainment area boundary for particulates was revised in 1987, the nonattainment area boundaries for ozone and CO have not changed since 1978. Since then, areas outside these boundaries have experienced explosive growth.

Recent developments in air pollution control and improvements in our understanding of the characteristics of the air pollution problems suggest that expanding the boundaries of Area A is desirable. The Reanalysis of the Voluntary Early Ozone Plan, prepared by ADEQ, shows that unhealthy levels of ozone are likely occurring not only in the eastern portion of Maricopa County, but in western Pinal County and perhaps the southern portion of Gila County. Recent modeling done by ADEQ shows similar patterns occurring under the eight-hour ozone standard, with violations likely occurring even farther to the east. Also, regional controls of fine particulates (i.e., PM_{2.5}) will be required to attain the PM₁₀ standard at a number of sites in the urban core.

The current boundaries of Area A for purposes of vehicle emissions testing, TRP, and fireplace restriction programs correspond to those of the Maricopa County ozone and CO nonattainment areas (roughly, Cotton Lane and the Beardsley Canal on the west; just south of New River "proper"; the Tonto National Forest boundary as it existed in 1978 on the north and east; and the Pinal County line on the east and south). While a designation as “nonattainment area” automatically imposes certain legal requirements under the Clean Air Act, Area A need not be defined coextensively with the nonattainment area boundaries. **The Task Force recommends expanding Area A, without expanding the nonattainment area boundaries, to make effective air pollution control measures applicable in areas that, since 1978, have experienced significant growth. The expanded applicability of these measures will assist with attainment of air quality.**

Considerable population growth has occurred or is likely for several areas outside of the current Area A boundaries. These include the following:

- # The Pinal County portion of Apache Junction, including the Gold Canyon Ranch area
- # New River
- # Rio Verde and the areas north and east of Fountain Hills
- # Developing areas in Pinal County south of Chandler Heights

The increase in population in areas adjacent to Area A will create sources of emissions that impact Area A and that should be subject to the control measures applicable to Area A. The purpose of this measure is to capture additional potential air quality benefits in the metropolitan area from the application of the air pollution control programs noted above in these areas outside of the current program boundaries. Emissions from these areas can potentially be transported into the Maricopa County Nonattainment Area and affect efforts to achieve attainment of the CO, ozone, and PM₁₀ standards within Maricopa County. Vehicles from outside the boundary also are likely to have higher per vehicle emissions because they are not subject to emissions testing and are likely to be operated, at least some of the time, within the nonattainment area.

Implementation Mechanism

The Task Force recommends that the Legislature, after considering the views of affected stakeholders and utilizing new data to be developed by ADEQ and other agencies, make the necessary legislative changes to expand the boundaries of Area A to incorporate the above-named growth areas.

Period Required for Implementation

To be determined by the Legislature.

Barriers to Implementation

Local political leaders in the potentially affected areas have expressed strong opposition to imposing additional air pollution control measures in those areas, which they characterize as generally rural in nature. Those officials also claim that they do not experience violations of the standards in those areas.

FIGURE 1

Effectiveness of Measure

Based on data presented in the ADEQ and MAG Report to the Joint Legislative Oversight Committee on Air Quality Measures (September 1, 1993), expanding the Vehicle Emissions Inspection Program to the indicated areas would reduce vehicular emissions of CO in the entire metropolitan area by 0.8 percent and 1.1 percent in 1999 and 2010, respectively. Estimated reductions in vehicle emissions of volatile organic chemicals are 0.4 percent and 0.7 percent for 1999 and 2010. Additional benefits may be realized by applying other pollution control measures that currently are in effect in Area A. Efforts are ongoing to better quantify the potential benefits of this measure.

Accuracy of Effectiveness Determination

Until census tract population data and other data sources are evaluated, the accuracy of this estimate cannot be determined.

Cost of Measure

Expanding the area subject to the regulatory requirements described above will subject the individuals and entities to the costs incurred to comply with those requirements. Because the scope of the expansion cannot be determined at this time it is impossible to calculate the exact cost of the "Area A" expansion.

Affected Parties

Individuals and entities in the expanded Area A.

Catalytic Converter Replacement

This measure applies to the following pollutants: CO, VOCs, NO_x, Urban Haze

Background and Description of Measure

In November 1993, House Bill 2001 became law. A contingency measure contained in the bill requires that, upon activation, a program be initiated requiring replacement of catalytic converters on vehicles failing I/M inspection due to normal deterioration of the catalytic converter system. This contingency measure also prohibits issuance of certificates of waiver for such vehicles. Activation of the contingency in June 1996 made it incumbent upon the state to develop the methodology necessary to implement the program.

The Emissions Research Laboratory has conducted a pilot study to determine whether to implement this program. An acceptable converter efficiency test was developed, and published by the Society of Automotive Engineers (SAE) as "Determination of Catalyst Oxidation and Reduction Efficiencies from Tailpipe Emissions Measurements", SAE Publication No. 972911. **The Task Force supports acquiring funding to implement this program, which requires that vehicles for which a waiver is requested will be required to be checked to determine whether the inability of the vehicle to meet emissions standards is due to a disfunctional catalyst. If so, the catalyst must be replaced.**

Implementation Mechanism

A full function catalyst efficiency test has been developed, validated, and applied to the pilot program. The test will need to be modified somewhat for the application in the Area A waiver facilities.

A vehicle submitted for waiver would be screened for converter efficiency. If the vehicle is otherwise in reasonable condition, and it is determined that converter replacement would provide actual emissions reduction benefits, a waiver would be denied until the converter is replaced. The cost of replacing the catalytic converter would be the responsibility of the vehicle owner.

If this control measure is adopted as part of the CO serious area plan to be credited toward attainment of the CO standard, ADEQ already has the authority to implement the program. In this case, no change in law would be necessary, as the provision is currently written into law as a contingency measure (see ARS § 49-542[R][1]), which was triggered with EPA's reclassification of the CO nonattainment area from

“moderate” to “serious” in June of 1996. ARS §49-542(S) would need to be modified to include the cost of catalyst replacement over and above the waiver limit.

Period Required for Implementation

A working catalyst efficiency test station could be installed at the waiver facility (W01), at 600 N. 40th Street in Phoenix within 60 calendar days, and subsequently at the other three waiver facilities.

Barriers to Implementation

Since the contingency within HB 2001 has been activated, it is possible to implement the measure administratively. There are no known political or practical barriers to implementation.

Effectiveness of Measure

The primary objective of the Catalyst Replacement Pilot Program was—determination of the potential emission reductions that could be realized by identifying and repairing nonworking catalysts. This information can be derived from the data collected to date. Data from 48 of the 51 retested vehicles currently available provides the average values in the table below.

AVERAGE VEHICLE TAILPIPE EMISSIONS								
BEFORE CATALYST REPLACEMENT GRAMS/TEST			AFTER CATALYST REPLACEMENT GRAMS/TEST			PERCENT REDUCTION		
HC	CO	NO _x	HC	CO	NO _x	HC	CO	NO _x
1.70	12.63	4.13	0.28	3.47	1.83	83.5	72.5	55.7

The emissions improvement shown in the table leave little doubt that replacement of inefficient catalysts is a highly effective emissions reduction strategy.

Accuracy of Effectiveness Determination

The data presented above were derived from an empirical study on 87 vehicles that failed vehicle emissions inspection testing conducted by the Emissions Research Laboratory at ADEQ.

Cost of Measure

The cost to implement the catalyst replacement program will be approximately \$28,000 per waiver lane (total capital cost of \$112,000), plus the cost to modify the software of the Gordon-Darby system, which is currently unknown. This will be a direct expenditure by ADEQ for hardware and software. Funding for this measure is included in the recommended control measure titled "Making the Vehicle Emissions Inspection Program Self Supporting." No other implementation costs are anticipated.

The cost of the replacement catalytic converter for a failed vehicle will be the responsibility of the vehicle owner, and in most cases will result in a vehicle which passes the IM 240 test rather than one which is waived. This cost is over and above the waiver limitation imposed since catalyst replacement, in addition to other related repairs, may exceed the current waiver limitation. As explained in a separate report by ADEQ on catalyst replacement costs, the majority of converters can be replaced in the range of \$125 to \$250; however, some converters for which universal replacement types are not available may be much higher. ADEQ has determined that Food Stamp recipients who are eligible for the Repair Grant Program could apply to a Repair Grant to assist in defraying the cost of catalyst replacement.

Affected Parties

- # ADEQ
- # Motorists with vehicles that are failing emissions inspection due to deterioration of the catalytic converter.
- # Emissions Inspection Contractor

IM 240 Testing of Constant Four-Wheel Drive Vehicles

This measure applies to the following pollutants: VOCs, NO_x, CO, PM₁₀, HAPs, Urban Haze

Background and Description of Measure

This measure would require that full-time four-wheel drive vehicles and vehicles equipped with traction control and anti-lock braking systems subject to emissions testing in Area A receive the transient loaded emissions test (i.e., IM 240). Implementation of this measure would require the installation of dual-axle dynamometers in several locations throughout the inspection station network in metropolitan Phoenix. National estimates comparing the effectiveness of idle tests and IM 240 tests show that IM 240 is about three times as effective in reducing vehicle emissions as the idle test.

Implementation Mechanism

The language of ARS §49-542.F.3 would need to be amended to reflect the change in testing. In addition, ADEQ and the emissions testing contractor would amend the existing contract to require installation of these dynamometers and administration of this test to the classes of vehicles described above. The emissions testing contractor would be responsible for the installation of dual-axle dynamometers in selected sites. Several more heavily utilized facilities would be selected, in coordination with ADEQ, as opposed to installing the dynamometers at each of the 10 facilities, as a cost saving initiative. Once the equipment is in place, the emissions testing contractor training of staff in the operation of vehicles on the special equipment would begin. Concurrently, ADEQ and the emissions testing contractor would begin a public education campaign to guide owners of the subject vehicles to the appropriate test locations. In addition, ADEQ would be required to amend rules to add full-time four-wheel drive vehicles and those with traction control to the vehicles required to receive transient loaded mode testing.

Period Required for Implementation

A formal rule revision and contract amendment would be required. A simple amendment to the existing rules could be processed in approximately six months. Following that, implementation would be completed in approximately six months.

Barriers to Implementation

There are few physical barriers to implementation. Equipment is available for the purpose.

Effectiveness of Measure

This measure would allow the transient testing of that portion of the fleet which cannot now be tested under load. Transient loaded testing has proved to be superior to either steady state loaded or unloaded (idle) testing because of its ability to identify problems during actual driving conditions. The current population of constant four-wheel drive vehicles and those with traction control, which are currently tested at idle, is 4 percent but is expected to grow significantly during upcoming years.

During the period from January 1, 1997 through October 31, 1997, the failure rate for constant four-wheel drive vehicles undergoing the idle test was 1.4 percent. During this same time period, the failure rate for light-duty vehicles and light-duty trucks undergoing the IM 240 test was 11 percent and 8.2 percent, respectively. It is anticipated that the failure rate for constant four-wheel drive vehicles undergoing the IM 240 test will increase to levels similar to those of the light-duty vehicles and trucks. Additionally, for the period from July 1, 1993 through June 30, 1994, the average reduction in emissions of vehicles which failed the idle and loaded test in Maricopa County, were repaired, and then passed was 45 percent for CO and 36 percent for VOCs. By comparison, for vehicles in a comparable situation subject to the IM 240 test, the average emissions reduction was 56 percent for CO and 54 percent for VOCs. It can be assumed that similar results would be obtained for testing of constant four-wheel drive vehicles.

Accuracy of Effectiveness Determination

There is no assessment of the effectiveness of the measure other than determining the impact on the fleet.

Cost of Measure

The cost of implementing this measure was estimated by the emissions testing contractor in 1996 to be approximately 15 cents per vehicle, based on the total fleet. Through a contract amendment, the direct cost of installing the necessary equipment would be borne by the contractor. The cost transfer to the program, and ultimately to the vehicle owner, would be through an increase in emissions test fees. This increase is incorporated in the measure for a self-supporting vehicle emissions inspection program.

Affected Parties

- # ADEQ
- # Commercial light duty fleets
- # Emissions testing contractor
- # Motorists owning full-time four-wheel drive vehicles and those with traction control

Improve Utilization of the Repair Grant Program

This measure applies to the following pollutants: VOCs, NO_x, CO, PM₁₀, HAPs, Urban Haze

Background and Description of Measure

The Vehicle Emissions Repair Grant Program was established by the November 1993 enactment of HB 2001. The program was initiated in January 1995 to provide financial assistance to repair Area A failing vehicles owned by Food Stamp recipients. To date the program has seen limited success, due to under-utilization. Some underlying causes for the low demand include the following:

- # Inherent difficulty in accessing the services, due in part to the fact that the U.S. Department of Agriculture would not allow ADEQ or its emissions inspection contractor direct access to the Department of Economic Security (DES) Food Stamp eligibility records. This prohibition necessitated the requirement for applicants to go to DES to obtain eligibility verification before beginning the grant process.
- # Many of the applicants lack the money to cover even their share of the repair cost, as authorized by the grant.
- # The process is cumbersome. Many who would have access to the repair grant program will not bother, if they can repair their vehicle for less than the repair cost limit.

The Task Force recommends that the current Vehicle Emission Repair Grant Program be streamlined to allow qualified private repair providers to be selected by ADEQ and made more accessible to qualified Food Stamp recipients.

The existing process is not difficult, but has several steps which have been included in order to afford safeguards for the citizen, the repair facility, and the state, consistent with the statutory instructions to implement the program in a manner that minimizes fraud. The steps in the existing process are defined in this and the following two paragraphs. Currently, owners of failing vehicles are encouraged to go to the test station office, where they can obtain information on possible causes of failure, recognized repair facilities and the Repair Grant Program. Information packets on the Repair Grant Program are published in English and in Spanish. In the information packet are instructions for both the applicant and the repair facility. A motorist with a failing vehicle and who also is a Food Stamp Recipient must obtain, from DES, a copy of his or her case profile, which verifies that the motorist is a current Food Stamp recipient.

Once the applicant has obtained this documentation, he is supposed to have his vehicle diagnosed by a repair facility of his choice. The repair facility must be recognized by the State as an automotive repair business and must be willing to work within the program guidelines. Included in the required diagnosis is a series of adjustments and checks which are known as a "low emissions tuneup." Following the diagnostic and adjustment process, the applicant is directed to present the vehicle to any of the four waiver lanes in the Phoenix metro area.

Depending on the results of the inspection at the Waiver Lane, the applicant may be directed to register his vehicle, if it passes as a result of a low emissions tune up, and ADEQ will issue payment for its share of the repairs. However, if the vehicle fails, and can be repaired within the cost constraints of the program, the applicant may be sent back to the repair facility with written authorization to perform additional repairs. The applicant then returns one more time to the waiver lane for final test and approval.

This measure would lessen the complexity of the current program, and make it more accessible and acceptable to potential grant recipients. In order to privatize the Repair Grant process, qualified repair providers would be selected by ADEQ and could be accessed directly by Food Stamp recipients, after they had obtained certification of eligibility from DES. This streamlining of the program would improve access for potential grant recipients.

Implementation Mechanism

ADEQ would be responsible for selecting qualified repair facilities through a Request for Proposal (RFP). In order to prepare for developing an RFP, ADEQ would likely issue a Request for Information, (RFI) in order to better understand vehicle repair market conditions. The RFI would seek information on emissions repairs that potential contractors would provide, including a schedule of prices. Based on responses to the RFI, ADEQ could develop the RFP, which would include requirements that bidders submit verification of adequate training in the emissions field, demonstrated proficiency in operating minimum vehicle diagnostic equipment, assurances of the ability to maintain appropriate records, a schedule of services and prices, and other related provisions to ensure competency and good value for the program.

Among the potential acceptance criteria would be training or certification by ADEQ or the National Association for Automotive Service Excellence (ASE). A list of services which the facility would be prepared to provide, and the expected prices for those services, would be required. ADEQ would set fixed prices, based on information from the RFI and bidder responses. Each selected provider would be required to submit to periodic reviews of records and work performance.

Following implementation of this measure, the information provided to persons requesting assistance at the emissions test station would include a directory of contracted providers, with whom the repair grant applicant would deal directly, after obtaining a DES case profile. The facility would be authorized to verify

the applicant's eligibility and perform the required repairs immediately. A final visit to the inspection station or waiver lane could be required as a check on the procedure, or, alternatively, ADEQ could rely on audits of repair facilities to ensure proper repairs are being made.

ADEQ would be charged with the oversight responsibility, and would be required to develop appropriate audit criteria and procedures. ADEQ would be required to ensure, through periodic auditing, that the providers are correctly diagnosing and repairing vehicles within the constraints of the established price schedule. Currently, consistency of repairs and prices is a problem. Operation of the repair grant program through contracted providers who are properly trained could reduce the potential for ineffective repairs.

Period Required for Implementation

A formal rule revision and contract amendment would be required, as well as issuance of an RFI and RFP, followed by selection of qualified repair facilities. ADEQ estimates this process could be completed within nine months of enactment.

Barriers to Implementation

There are few barriers to implementation.

Effectiveness of Measure

This measure would increase the likelihood of proper diagnosis and repair of failing vehicles, because only qualified facilities would be used. In addition, repair of vehicles would obviate the need for owners to seek waivers, and would remove the incentive for owners of failing vehicles to improperly register those vehicles.

Accuracy of Effectiveness Determination

There currently is no available assessment of the effectiveness of the measure in reducing fleet emissions.

Cost of Measure

There would be some additional administrative costs involved with privatization of the repair grant program. Most additional costs would appear in the form of increased staff requirements. ADEQ estimates that fiscal and technical auditors would be required, as well as an additional account technician.

Costs for these new personnel would total \$173,847 in the first year, with recurring costs of \$143,847. These costs are included in the measure creating a self-sufficient vehicle emission inspection program.

Affected Parties

- # ADEQ
- # Commercial repair facilities
- # Emissions testing contractor
- # Motorists who are Food Stamp recipients and own failing vehicles

Increase the Repair Cap Cost for 1967-1974 Model Year Vehicles Registered in Area A

This measure applies to the following pollutants: VOCs, NO_x, CO, PM₁₀, HAPs, Urban Haze

Background and Description of Measure

Owners of failing vehicles may be entitled to waivers if the total cost of repairs for bringing the vehicles into compliance exceeds caps set in statute. Caps vary by model year, and currently are set at \$100 for 1967-74 model years, \$300 for 1975-79 model years, and \$450 for 1980 and newer model years. While these caps were last adjusted in 1993, very little repair work can be accomplished with today's prices on the 1967-74 model year vehicles within the existing cap. **This measure would raise the repair cap for 1967-74 model year vehicles in Area A to \$300. This increase would allow meaningful repairs to be performed on these vehicles, including repair of faulty carburetors, a frequent cause of excessive emissions.**

Implementation Mechanism

Legislation to change the repair cap for 1967-74 model year vehicles to \$300 would be required. Once enacted, ADEQ would be required to revise its rules relating to waivers to reflect the new cap.

Period Required for Implementation

While the statutory change would override existing rules upon the effective date, this change in rule could be adopted within six months.

Barriers to Implementation

Potential objections by owners of failing 1967-74 model year vehicles.

Effectiveness of Measure

This measure would increase the diagnosis and repair of malfunctioning, high-emitting vehicles and reduce the waiver rate for these model years.

Accuracy of Effectiveness Determination

There is no assessment of the effectiveness of the measure in reducing fleet emissions.

Cost of Measure

This measure would not increase administrative costs. The cost to owners of these failing vehicles would increase, but the measure could obviate the need for a waiver. Receiving waivers allows these vehicles to be re-registered only for an additional year after which they are required either to be repaired or taken out of service.

Affected Parties

- # ADEQ
- # Emissions testing contractor
- # Motorists who own high-emitting pre-1975 model year vehicles

Remote Sensing Program Flexibility

This measure applies to the following pollutants: CO, VOC, NOx, Urban Haze

Background and Description of Measure

In November 1993, House Bill 2001 was enacted, authorizing ADEQ to conduct a random on-road remote sensing program to identify high-emitting vehicles registered in Area A. Currently, all vehicles registered within Area A that are identified by remote sensing as potential high emitters are required to undergo emission inspection, and if found to be malfunctioning, be repaired. The statute currently specifies that a minimum of six remote sensing units be deployed throughout Area A. This requirement limits ADEQ's ability to maximize the emission benefits of the remote sensing program because technological advances may allow for higher efficiency with fewer units. **Implementation of this measure would allow ADEQ more flexibility to conduct the program in the most efficient manner by deleting the requirement for a specific number of units.**

Implementation Mechanism

This measure would require revision of the statute ARS 49-542.01. Suggested revised language is as follows:

"The director shall implement a random on-road testing program in area A as a supplement to the periodic inspection requirement prescribed by section 49-542. The program shall include the use of remote sensing devices. The Department shall operate the Remote Sensing Program in an efficient and cost-effective manner so as to maximize the emission reduction benefits of the program. The remote sensing devices shall be deployed throughout the non-attainment area."

Period Required for Implementation

An amendment to the Remote Sensing contract would be necessary. ADEQ estimates that this could be completed within six months of enactment.

Barriers to Implementation

Obtaining the necessary statutory change.

Effectiveness of Measure

The primary objective of this measure is to allow sufficient flexibility in the statute for ADEQ to optimize the performance of the program. This effectiveness may be demonstrated by research conducted by the remote sensing contractor regarding technological advances of remote sensing equipment. Based upon this research, the remote sensing contractor indicates that four new remote sensing devices would be capable of collecting an equal amount of more accurate data, when compared the six units currently required under the existing statute. Likewise, the performance criteria that will be developed will ensure that specific requirements must be met and that ADEQ will have the flexibility to maximize program effectiveness.

Accuracy of Effectiveness Determination

Not applicable.

Cost of Measure

This measure will have no added costs. The intent is to allow ADEQ to maximize the performance of the program by reinvesting resources to upgrade remote sensing equipment/instrumentation.

Affected Parties

- # ADEQ
- # Remote sensing contractor
- # Owners of high polluting vehicles identified by remote sensing

Remote Sensing Identification of High-Emitting Pre-1967 Model Year Vehicles Operated In Area A

This measure applies to the following pollutants: VOCs, NO_x, CO, PM₁₀, HAPs, Urban Haze

Background and Description of Measure

Currently, the remote sensing program is authorized to identify high polluting vehicles that are registered in Area A and subject to Emissions Inspection (i.e., 1967 and newer model years). **This measure would apply the Remote Sensing Program to pre-1967 model year vehicles that are identified as high emitters and found to be frequently operating in Area A.** This is consistent with another recommended measure that would increase the applicability of remote sensing to vehicles that are found to be high emitters traveling frequently in Area A, regardless of where they are registered in Arizona.

Implementation Mechanism

A change to Arizona Revised Statutes § 49-542.J.2(a) would be necessary to modify the current exemption from emissions testing of 1966 and older model year vehicles to allow the emissions testing requirement to be triggered by remote sensing. ADEQ and the remote sensing contractor would be responsible for identifying screening criteria to identify high-emitting pre-1967 model year vehicles which are likely to have malfunctions that contribute to excessive emissions and are operated frequently in Area A. ADEQ and the emissions inspection contractor would be responsible for developing appropriate pass-fail standards for pre-1967 model year vehicles. Notifications to owners of these vehicles would be processed by ADEQ, the remote sensing contractor, and MVD. In addition, registration suspensions would be processed by ADEQ, the remote sensing and emissions inspection contractors, and MVD.

Period Required For Implementation

Revisions to the remote sensing and emissions inspection rules would be required as well as amendments to the emissions inspection and remote sensing contracts. ADEQ estimates this process could be completed within nine months of enactment.

Barriers to Implementation

Potential objections by owners of pre-1967 model year vehicles.

Effectiveness of Measure

This measure would increase the diagnosis and repair of malfunctioning, and therefore high-emitting vehicles. No quantitative estimates are currently available for either the number of previously exempt, high-polluting vehicles that would be identified by the measure, or the average per-vehicle emission reduction that would result from identification and repair of these vehicles. However, there are more than 40,000 pre-1967 vehicles registered in Maricopa County alone, which indicates that the total resulting emissions reduction is likely to be significant.

Accuracy of Effectiveness Determination

There is no quantitative assessment of the effectiveness of the measure in reducing fleet emissions.

Cost of Measure

There would be some additional administrative costs for processing additional notifications, which cannot be estimated at this time.

Affected Parties

- # ADEQ
- # Remote sensing contractor
- # Emissions testing contractor
- # Motorists who own high-emitting pre-1967 model year vehicles

Remote Sensing Program Resources

This measure applies to the following pollutants: CO, VOCs, NO_x, Urban Haze

Background and Description of Measure

In November 1993, House Bill 2001 was enacted, authorizing ADEQ to conduct a random on-road remote sensing program to identify high-emitting vehicles registered in Area A. Currently, all vehicles registered within Area A that are identified by remote sensing as potential high emitters are required to undergo emission inspection, and if found to be malfunctioning, to be repaired. Program resources are appropriated annually and fixed at a cost of \$914,740 per year.

Program performance could be significantly enhanced through implementation of advancements in remote sensing technology developed since the inception of the program in 1995. Additional improvements could be gained from implementing data quality assurance (QA) and data quality evaluation procedures. However, a lack of resources currently prevents implementation of advanced technology or data QA and evaluation activities.

The purpose of this measure is to recommend additional funding for enhancements to the current remote sensing technology, and to improve the QA and data quality evaluation procedures of the current program. Improvements to the equipment, combined with the resources to conduct QA and data quality evaluation, would allow ADEQ to enhance overall program effectiveness. Information provided by the remote sensing contractor shows that their laser-based speed/acceleration monitoring system is superior in accuracy to the current pneumatic-based system. Likewise, advancements in the accuracy of the sensors and the vehicle capture rate of the units would improve and enhance the remote sensing program. In addition, because of uncompetitively low salaries, ADEQ has been unable to hire a qualified data analyst. A portion of the needed data QA and evaluation resources could be used to retain a contractor to perform these services.

Implementation Mechanism

A proposal from the remote sensing contractor regarding technological advancements and enhancements to the program has been received by ADEQ and is currently being evaluated. If additional resources are appropriated, the remote sensing contractor could, with ADEQ's approval, procure the necessary equipment and implement the use of the equipment in the remote sensing program. As with any regulatory

program, there is a need to conduct data QA and data quality evaluation to evaluate overall program performance as well as contractor performance. These items would be implemented by providing the financial resource to conduct data QA (auditing) and developing a work plan for the purpose of identifying, evaluating, and implementing specific additional enhancements to the program.

Period Required for Implementation

This measure could be implemented administratively.

Barriers to Implementation

Obtaining additional funding.

Effectiveness of Measure

The primary objective of the measure is to procure the resources to ensure high quality data which will subsequently provide enhanced program performance. Based upon the remote sensing contractor's research, it is estimated that equipment improvements/enhancements would nearly double vehicle capture rates and increase data accuracy.

The data QA (auditing) will provide the resources to ensure quality data is collected. The data evaluation item will allow us to determine and implement enhancements to the program. It is difficult, however, to determine the effectiveness of such items until enhancements are evaluated and implemented.

Accuracy of Effectiveness Determination

Not applicable.

Cost of Measure

The cost to implement this measure is unavailable at this time. This measure would share resources (i.e., FTE) with the measure recommending a pilot program for roadside testing of diesel vehicles with a snap acceleration test.

Affected Parties

- # ADEQ
- # Remote sensing contractor

Remote Sensing Non-Compliance Penalty/Re-registration Fee

This measure applies to the following pollutants: CO, PM, NO_x, VOCs, Urban Haze

Background and Description of Measure

Noncompliance with the requirements of the remote sensing program operated in Area A is a significant problem. In a sampling conducted in 1996, 63 percent of those who were mailed a notice failed to submit their vehicles for inspection. In the latest sampling, 42 percent of those noticed initially failed to respond. In addition, some of the vehicles tested in response to the remote sensing notice fail the emissions or tampering inspection, and the owner does not repair the vehicle or return for a confirming emissions retest.

Currently, ADEQ notifies the Motor Vehicle Division of ADOT (MVD) to suspend the registration of non-compliant vehicles. MVD forwards a notice of registration suspension to the owner of such vehicles. To reinstate the registration, the motorist must submit to MVD a vehicle emissions inspection document indicating the vehicle has subsequently passed emissions inspection or received a waiver, and pay an \$8.00 reinstatement fee. There are no direct penalties for failure to comply with the remote sensing requirement, unless the motorist is stopped by a law enforcement official for an unrelated reason. In such instances, the motorist could be cited for operating the vehicle on the road with suspended registration. It seems clear that these disincentives for non-compliance are ineffective.

This measure would require revision of the remote sensing statute and applicable motor vehicle statutes to create either a special re-registration fee or penalty for remote sensing non-compliance (failure to respond to remote sensing notice or failure to repair a vehicle failing a remote sensing triggered emissions test).

Implementation Mechanism

This measure would require amendment of the remote sensing and applicable motor vehicle registration statutes to apply the \$100 civil penalty provided in ARS §49-550. The remote sensing notice mailed to vehicle owners would be revised to advise of the penalties for failure to submit their vehicles for inspection. Owners of vehicles that fail a remote sensing triggered emissions test could be advised of the penalty for failure to make necessary repairs in a handout provided at the emissions inspection stations. Provisions

could be made to waive the penalty for motorists who decide to dispose of the vehicle rather than incur the expense of repair or meeting the requirements for a waiver. In such cases the motorist would have to submit evidence to the MVD of sale of the vehicle to a licensed automobile dealer or licensed automobile dismantler (vehicles sold to a dealer or dismantler cannot be returned to service in Area A or Area B [greater Tucson] until they pass all emissions inspection requirements).

Period Required for Implementation

To be determined by Motor Vehicle Division.

Barriers to Implementation

Obtaining statutory authority.

Effectiveness of Measure

ADEQ does not have an estimate of the effectiveness of this measure at this time. If implemented, the effectiveness could be assessed by continually monitoring and assessing improvement in the remote sensing compliance rate.

Accuracy of Effectiveness Determination

Not applicable.

Cost of Measure

Assessment of a re-registration penalty for failure to comply would not require additional funding. ADOT can absorb the nominal costs that would be involved with revising their procedures to assess the penalty.

Affected Parties

- # ADEQ
- # ADOT, MVD
- # Motorists with high polluting vehicles identified by remote sensing and who do not comply with emissions inspection requirements

Pilot Program For Roadside Testing of Diesel Vehicle with Snap Acceleration Test

This measure applies to the following pollutants: VOCs, NO_x, PM₁₀, HAPs, Urban Haze

Background and Description of Measure

This measure proposes legislation for authorization and funding for a pilot roadside-testing program of heavy-duty diesel vehicles using the snap acceleration test. One advantage of the snap acceleration test is that it can also be used as a “pullover” test. This measure proposes a roadside test program which would identify the impacts of emissions from diesel vehicles from outside Maricopa County, including pro rata, out-of-state, and out-of-county vehicles. This pilot program would use the pass-fail standards developed by the California Air Resources Board (CARB). This would have the advantage of testing out-of-state vehicles, as well as vehicles which may have undergone central testing but are currently not meeting standards.

Currently, diesel vehicles registered in Maricopa County are subject to a lug down test, which measures exhaust opacity during application of a load on dynamometer equipment. This test has resulted in approximately a 5-percent failure rate. ARS §49-542.F.2 requires that diesels over 8,500 pounds that are registered in Area A and more than 33 months beyond the initial date of registration must take the snap acceleration test (SAE J1667). Vehicles under 8,500 pounds would continue to take the current test.

ADEQ currently is in the process of proposing a rule for the snap acceleration test. If approved, it would probably be effective by the summer of 1998. The snap acceleration test covered by that rule would be conducted through centralized testing and incorporated into the current VET program.

On December 11, 1997, CARB approved a roadside inspection program for heavy-duty trucks and buses, which will begin in mid-1998 using the SAE J1667 test procedure. Drivers of vehicles failing the opacity standards (55 percent or greater, depending on the engine model year) will be issued “fix-it” tickets, and may be subject to fines.

In Salt Lake County, Utah, decentralized snap acceleration tests for heavy-duty diesel trucks have been conducted since 1996. The Salt Lake test, which is intended to catch and repair only the gross emitters with tailpipe opacities above 80 percent, has resulted in failure rates in the 18 to 20 percent range.

Implementation Mechanism

The Arizona Legislature would pass legislation to authorize and fund a pilot roadside snap acceleration test as a component in the vehicle inspection/maintenance program. ADEQ could administer the pilot program. After the pilot program has been conducted an assessment report would be submitted to the Legislature and to the Governor.

Period Required for Implementation

Legislation could be enacted during the 1998 legislative session. Acquisition of equipment and development of testing procedures could be completed within 3 months after effectiveness of the required legislation.

Barriers to Implementation

This pilot program would be conducted in conjunction with existing pullover programs, such as safety pullovers. The administrators of existing pullover programs have indicated that they would cooperate with ADEQ for such a program, provided that the testing is conducted by ADEQ. The only barriers for this pilot program are for personnel (estimated as 1 FTE) and for purchase of the required test equipment.

Effectiveness of Measure

The effectiveness of this measure is unknown; however, in the Particulate Control Measure Feasibility Study, (1997), conducted by Sierra Research, it was estimated that the snap acceleration test resulted in a reduction of 1.6 pounds of PM₁₀ per vehicle tested per year. In the Feasibility and Cost Effectiveness Study of New Air Pollution Control Measures Pertaining to Mobile Sources, (1993) by Sierra Research, it was estimated that two roadside teams could inspect 7,500 vehicles per year. At this level of activity, approximately 6 tons of PM₁₀ would be reduced per year. The pilot program would be conducted for one year and data on its performance would be used to evaluate the potential effectiveness of a permanent program.

Accuracy of Effectiveness Determination

The snap acceleration test with the SAE J1667 protocol has not been widely applied, and data on emission reduction are not extensive. In the Particulate Control Measure Feasibility Study, (1997), it was estimated that the total incremental cost of central snap acceleration testing would average \$91 per vehicle, including public and private costs. The cost effectiveness was estimated to be about \$58 per pound.

Cost of Measure

Estimated cost for a pilot program is \$120,000. This includes a one-time \$40,000 expenditure for equipment. A cost of \$70,000 per year would be needed to support the FTE, which could also support the VEI remote sensing QA/QC proposal. These costs are included in the measure titled “Making the Vehicle Emissions Inspection Program Self-Supporting.”

Affected Parties

- # Arizona trucking industry
- # Other public and private owners of diesel vehicles
- # ADEQ

Waiver Program “Gross Polluter” Measure

This measure applies to the following pollutants: VOCs, NO_x, CO, PM₁₀, HAPs, Urban Haze

Background and Description of Measure

In July 1996, the Forty-Second Legislature, in Seventh Special Session, adopted SB 1002, which provided, in part, that failing vehicles granted a waiver would not be eligible for additional waivers, should they fail in future years. The provision, referred to as the One-Time-Only Waiver, became effective January 1, 1997.

The Forty-Third Legislature, First Regular Session, passed House Bill 2237 in April 1997. The bill included session law requiring ADEQ to submit to the Governor, the President of the Senate, and Speaker of the House a report on the One-Time-Only Waiver by September 30, 1997. Included in that report were options to the existing waiver program, including a strategy being utilized in the State of California which targets the worst polluters.

The Task Force recommends that the California Gross Polluter provision be adopted as a measure to address the problem of the worst polluting vehicles. Under this provision, vehicles that fail the emissions test at pollution levels higher than twice the established standard for that vehicle class are not eligible for waiver unless the vehicle is repaired sufficiently to achieve an emissions reading below two times the standard. For example, if a vehicle subject to a CO standard of 20 grams per mile (gpm), produced 70 gpm, it would be denied a waiver until the CO emissions were brought below 40 gpm. In addition, this measure would impose a gross-polluter surcharge constituting 10 percent of the total costs of reregistration that would be applicable to vehicles that fail emissions inspection by at least twice the established standard for that vehicle class.

This strategy targets vehicles with the highest emissions. Instead of allowing gross polluter vehicles to receive waivers and continue to be registered for one or two years (depending upon the testing cycle for those vehicles), the owner would be required to achieve a reasonable reduction in the vehicle's emission level. In requiring some serious reduction of the gross vehicle emissions, the program achieves greater overall reduction benefits than allowing these vehicles to be routinely waived. This strategy could be implemented in conjunction with the One-Time-Only waiver or any other strategy to increase air quality benefits.

Implementation Mechanism

This measure would require enactment of an amendment to ARS § 49-542 and subsequent rulemaking.

Period Required for Implementation

Within one year of enactment of the required statutory changes.

Barriers to Implementation

There are no known technical barriers to implementation of this strategy. Repair costs would be borne by the affected vehicle owners, whose current alternative is to fully repair or not register their vehicles following the cycle in which the vehicles are waived.

Effectiveness of Measure

This measure has not been modeled, but it is reasonable to assume that reducing the pollution level of the “worst-of-the-worst” would have a significant positive effect on the air quality.

Accuracy of Effectiveness Determination

Not applicable.

Cost of Measure

There are no anticipated implementation costs for this measure, other than those for software modification, which would be minimal, but are unknown at this time. The cost of vehicle repair would be borne by the vehicle owner, and may qualify to be shared through the Repair Grant Program. The cost to the individual vehicle owner may be high, depending on the work necessary to achieve compliance; however, the cost of repair is unlikely to compare to the cost of replacing a vehicle that cannot be re-registered because the vehicle cannot receive a waiver.

Affected Parties

- # ADEQ
- # Emissions inspection contractor
- # ADOT, MVD
- # Affected motorists

Implementation of Snap Acceleration Testing for Diesel Vehicles Registered in Area A

This measure applies to the following pollutants: VOCs, NO_x, CO, PM₁₀, HAPs, Urban Haze

Background and Description of Measure

This measure would require that diesel vehicles registered in Area A with a gross vehicle weight rate (GVWR) of greater than 8,500 pounds be subject to an annual snap acceleration test in lieu of the current lug-down test. This change in diesel test procedures was authorized in 1996 by SB 1002.

Implementation Mechanism

This measure would require an amendment to ARS §49-543-B is necessary to authorize the change in emissions inspection fees to cover the cost of the improved test. The cost of the I/M test for vehicles with 8,500-26,000 GVWR would increase from \$10 to an estimated \$20-\$25. Currently, vehicles greater than 26,000 GVWR are charged \$25 per test. Also, a formal rule revision and contract amendment would be required for implementation of the measure. ADEQ and the emissions testing contractor would amend the existing contract to require installation of new opacity meters and to develop and implement new software. In the year 2000, ADEQ estimates that 22,000 vehicles are subject to diesel testing with about 60 percent of them being in the 8,500-26,000 pound GVWR class.

Period Required for Implementation

ADEQ currently is developing a rule describing the snap acceleration test requirements, which if proposed in a timely manner, could be implemented in the fall of 1998. Additional time may be necessary to allow diesel fleets that implement their own tests under SB1002 to acquire new opacity meters.

Barriers to Implementation

Obtaining the necessary statutory change.

Effectiveness of Measure

On December 11, 1997, the California Air Resources Board voted to approve implementation of the Snap Acceleration Testing for heavy-duty fleet vehicles registered there as well as a Roadside Pullover Program (discussed under a separate measure). The CARB staff report estimated the cost effectiveness of these two program to be \$2,240 per ton in 1999.

Accuracy of Effectiveness Determination

Additional time will be necessary to better quantify the benefits of this program in Area A.

Cost of Measure

The emission inspection contractor would most likely propose a per-test fee for all Area A snap acceleration tests. The fee is unknown at this time. Smoke meters which conform to the requirements of SAE J1667 specifications are estimated to cost \$10,000 each. At least one lane at each of the ten Area A inspection stations would need to be snap acceleration test-capable, with a minimum of two spare units available. The total estimated cost for smoke meters at emission inspection stations is \$120,000. Additional meters would be required for the four ADEQ waiver lanes, bringing the total equipment cost to \$160,000. Other costs for implementation by the contractor would include software modifications and training, and are unknown at this time. Fleets will be able to purchase smoke meters for \$4,000-10,000 per unit.

Affected Parties

- # ADEQ
- # Heavy-duty diesel fleets
- # Emissions testing contractor
- # Motorists owning heavy-duty diesel vehicles

Making Vehicle Emissions Programs Self-supporting

This measure applies to the following pollutants: VOCs, NO_x, CO, PM₁₀, HAPs, Urban Haze

Background and Description of Measure

This measure is designed to provide adequate future funding for vehicle emissions programs. The vehicle emissions programs lack adequate future funding in the following areas:

- # The current statute caps the annual emissions inspection fee at \$10 per year. While this cap currently covers the costs of emissions testing in Pima County and for pre-1980 model year vehicles in Maricopa County, it is not sufficient to support the full cost of the IM 240 Program for 1981 and newer vehicles in Maricopa County. The actual cost of an IM 240 test today is \$24.30. Continued increases in inspection costs are anticipated for future years. These circumstances create the need to cover the gap between the actual costs of testing and the limit on how much can be collected in fees for testing.
- # This existing statutory cap on annual emissions inspection fees also requires that almost all emissions tests required as a result of remote sensing must be paid for by the state rather than by vehicle owners in the affected areas.
- # The vehicle emission program presently charges for the issuance of waivers, certificates of exemption, and certificates of inspection. However, the \$5 statutory cap on waiver fees falls far short of supporting the waiver program. The estimated actual cost is \$54 per waiver or for vehicles which actually pass while requesting a waiver in Maricopa County. The actual cost of waiver actions in Pima County is \$40.
- # The vehicle emissions program supports a number of activities for which there are presently no dedicated funding sources. These include the need to buy-down contractor costs for IM 240, remote sensing-generated emissions test fees, customer assistance activities, repair grant program for Food Stamp recipients, repair industry outreach and training, remote sensing program, and oversight of the emission inspection contract. These activities currently are supported by annual appropriations from the Clean Air Fund.

In order to address problems related to implementation of a longer enhanced VEI test, contractual issues and the capacity of the testing network, ADEQ prepared a report to the Joint Legislative Budget

Committee that proposed resolutions to these problems. Nine options were proposed (i.e., all the possible combinations of three different testing network capacity approaches and three alternate funding methods). The three network capacity approaches were to:

- A. Retain the status quo (biennial tests for all post-1980 model year vehicles with an option of paying an in-lieu test fee for the first scheduled emissions test for a new vehicle, and annual loaded/idle tests for pre-1981 model year vehicles and post-1980 model year heavy-duty vehicles, motorcycles, and medium and light-duty vehicles incapable of being tested on a dynamometer);
- B. Exempting the two newest model year vehicles from testing; and
- C. Exempting the four newest model year vehicles from testing.

Modeling demonstrated that only a minimal impact on the effectiveness of the program would result from exempting the newer model years (0.06 percent increase emissions, in the worst case). The funding approaches were:

- 1. ~~Retaining~~ a legislative appropriation to cover the expenses of the VEI program that exceed existing revenue sources;
- 2. Raising all current fees charged for VEI program tests and services to cover their true costs, and relying on a legislative appropriation to fund services for which there are no fees; and
- 3. Retaining the existing revenue structure for fees currently charged, and applying a new administrative fee to all initial emissions inspection tests and in-lieu fees.

In addition, for the two and four model year exemption approaches, in-lieu test fees would be charged. As the attached spreadsheets demonstrate, these in-lieu fees would raise considerable sums of money capable of offsetting a portion of the administrative fee, and would eliminate the need for some or all of the legislative appropriations. It should be noted that current in-lieu fees are deposited in the Clean Air Fund, which was established to provide monies for development of alternative fuel refueling facilities and conversion of government fleets to alternative fuels. In-lieu fees proposed in this measure are anticipated to be deposited in the Clean Air Fund to meet the current level of income to the fund from existing in-lieu fees.

Spreadsheets summarizing the economic factors associated with each of the nine options described above are provided at the end of this measure description.

Both the CO Subcommittee and the Task Force recommended Option B3, which includes the following features:

- # Removes statutory caps on emission inspector fees contained in ARS 49-543, ending the State subsidiary of the IM 240 test and requiring owners of subject vehicles to pay the full cost of the test, \$24.30.
- # Retains the current waivers and out-of-state exemption fees at \$5.00 and \$3.00, respectively.
- # To fund the non-revenue generating portion of the Vehicle Emission Program and new Area A Programs recommended by the Task Force, adds an administrative fee to be collected at each initial inspection of \$5.63 in Area A and \$1.05 in Area B.
- # Exempts the two most recent model years from testing while requiring them to pay an in-lieu fee equal to the actual cost plus the administrative fee. (In Area A, the fee would consist of the \$24.30 test cost, plus an administrative fee of \$5.63. In Area B, the fee would include an estimated \$8.05 test cost, plus a \$1.05 administrative fee.)

The principal reasons for this recommendation are as follows:

- # Exempting the two most recent model years from testing mitigates the need for expansion of the emissions testing network with a minimal increase in vehicle emissions;
- # Exempting the two most recent model years will provide an opportunity for most vehicle owners to have their vehicles tested while the emissions systems are still under factory warranty; and
- # Option B2, which increases all fees to cover their true costs, was judged to impose a disproportionate burden on motorists receiving waivers.

In addition to covering the current costs of the VEI program, several enhancements are contemplated in other control measures. The costs of these enhancements are identified in the final page of the attached spreadsheets with respect to total cost and the effect on the initial-test administrative fee.

Implementation Mechanism

Implementation of this measure entails enactment of amendments to ARS Section § 49-543.

Period Required for Implementation

The Task Force recommends adoption of these changes to current State law for the 1998 session of State Legislature.

Barriers to Implementation

Some motorists and their representatives may resist additional fees. Establishing a new administrative fee is likely to require a two-thirds vote in each house of the State Legislature.

Effectiveness of Measure

This measure is designed to make all programs to control vehicle emissions in the Maricopa and Pima Motor vehicle emissions control areas self-sufficient, thus ensuring their continued uninterrupted operation.

Vehicles contribute about 75 percent of CO emissions, 30 percent of ozone forming volatile organic chemical emissions, 65 percent of NO_x and 55 percent of PM (annual average) emissions in the Maricopa Nonattainment Area.

Accuracy of Effectiveness Determination

Not applicable.

Cost of Measure

See attached spreadsheets.

Affected Parties

- # Motorists in Maricopa and Pima counties
- # Arizona Legislature
- # ADEQ
- # MVD
- # Emissions inspection and remote sensing contractors

Insert VEI Funding Spreadsheet, Page 1

Insert VEI Funding Spreadsheet, Page 2

Please call Michelle Ringsmuth at (602) 207-2372 to receive a copy of this spreadsheet.

Insert VEI Funding Spreadsheet, Page 3

Please call Michelle Ringsmuth at (602) 207-2372 to receive a copy of this spreadsheet.

Insert VEI Funding Spreadsheet, Page 4

Please call Michelle Ringsmuth at (602) 207-2372 to receive a copy of this spreadsheet.

Insert VEI Funding Spreadsheet, Page 5

Please call Michelle Ringsmuth at (602) 207-2372 to receive a copy of this spreadsheet.

Insert VEI Funding Spreadsheet, Page 6

Please call Michelle Ringsmuth at (602) 207-2372 to receive a copy of this spreadsheet.

THE IMPORTANCE OF ADOPTING A MORE STRINGENT WINTERTIME GASOLINE STANDARD

Serious Area Plan and Attainment Status

The Maricopa County CO nonattainment area was reclassified from “moderate” to “serious” nonattainment in July 1996. As a result, the State must submit a serious area plan that demonstrates attainment of the CO standard by December 31, 2000; this means that the area must not experience a violation of the CO standard during 1999 and 2000.

The modeling analysis developed by MAG for the purposes of the serious area plan shows that, with existing control measures the area cannot demonstrate attainment of the CO standard by the deadline. Recognizing that the EPA I/M 240 test as designed, with final cutpoints cannot be implemented, an additional 26 tons per day CO emissions reductions will be necessary to demonstrate attainment by a very narrow margin.

The measures adopted by the Task Force only address wintertime gasoline standards. The Cleaner Burning Fuels Subcommittee and the Task Force also considered adoption of a mandatory, year-round California Air Resources Board (CARB) Phase 2 gasoline standards. This measure was not adopted by either of these bodies.

Measures Considered by the Task Force

On-road and non-road mobile sources are projected to account for about 98 percent of all CO emissions in the year 2000, with nearly all of the emissions coming from gasoline engines, wintertime gasoline properties are one of the biggest influences on CO emissions levels. Of all of the CO control measures evaluated by the Task Force, increasing the stringency of wintertime gasoline standards had the greatest potential for reducing CO emissions. As a result, the Task Force has given serious consideration to the two most effective and most cost-effective fuel options:

- # Option 1 - A new restriction on Arizona Cleaner Burning Gasoline (CBG) Type 1 (Federal Phase II RFG look-alike) look-alike to limit sulfur to 30 parts per million average, effective November 1 through March 31 of each year, beginning November 1, 2000; and
- # Option 2 - CBG Type 2 (CARB Phase 2 look-alike) specifications for wintertime fuel, while maintaining the current wintertime oxygenate and Reid Vapor Pressure (RVP) requirements, effective November 1 through March 31 of each year beginning November 1, 2000.

At this juncture, adoption of a more stringent wintertime gasoline standard in time for the fuel to be used in the winter of 2000-2001 is perhaps the only means available to demonstrate compliance with the CO standard by the end of 2000. Consequently, rapid adoption of statutory and regulatory revisions was viewed as essential to achieving the goal of this measure. Of equal importance, the gasoline producers need a clear indication of these future requirements in order to obtain and commit the necessary capital resources.

Some refiners (particularly from the west) are capable of providing either of these gasoline formulations without capital investment. However, all refiners from west Texas and New Mexico that currently provide gasoline to the Maricopa County market would need to make capital improvements to deliver either of these formulations.

Common Barriers to Implementation

A barrier to successful acceptance of either fuel formulation discussed at length during Task Force deliberations, was the possible increased consumer price for the fuels. As in all geographic markets the interaction of many factors, ranging from the price of crude oil to customer amenities, affects the pump price of gasoline in Maricopa County. On the whole, petroleum industry representatives indicate that some gasoline price increase could occur as a result of the adoption of either fuel measure, at least during a transition period after either fuel is introduced. As more time passes, competitive pressures will encourage gasoline suppliers adjust production to meet demand.

Regardless of cost for providing more stringent gasoline formulations, any capital investment that would be required demands necessary lead-time in order to design, permit, finance, and construct additional facilities necessary to produce and deliver the gasoline (may include refinery units or additional refinery or pipeline storage tanks).

For the Arizona market, two potentialities exist (not exclusive of each other):

- # refinery investment, particularly for West Texas and New Mexico refineries now serving the Maricopa County market; and
- # connection of the existing delivery system to the very large and sophisticated Gulf Coast refining center via the Longhorn pipeline, which is discussed in more detail below.

The Longhorn pipeline would carry refined products from the U.S. Gulf Coast to El Paso, where it would link to the SFPP East pipeline system. The pipeline could allow Gulf Coast refiners to deliver gasoline and/or diesel fuel to Maricopa County for 2¢ to 3¢/gallon less than they could now. With timely completion, the proposed Longhorn pipeline (discussed in the next section) could influence the time of

availability of certain fuel formulations. For example, the pipeline could make CBG Type 1 (80 ppm sulfur) available to Maricopa County earlier than what is indicated above. The West refining center can produce CBG Type 1 gasoline (80 ppm sulfur) for Maricopa County now; the East cannot. If the Longhorn pipeline were in place, Gulf Coast refineries could supply CBG Type 1 (80 ppm sulfur) to Maricopa County in volumes sufficient to make up for shortfalls (if any) from the East refining center. (Gulf Coast refineries could also supply the other gasoline formulations and/or the diesel fuel formulations through the Longhorn pipeline, but not in volumes sufficient to meet Maricopa County demand.)

Subcommittee and Task Force Action

The Cleaner Burning Fuels Subcommittee of the Task Force could not achieve consensus on which of these two options to recommend for adoption in the final report. In fact, the vote for these fuels in the subcommittee was evenly split (six to six, with several abstentions). At the Task Force meeting on January 28, 1998, the Task Force entertained arguments for both of these options, and voted 12 to 10 (with the Chairmen breaking a tie vote) in support of the CARB Phase 2 fuel. Because of their inability to achieve consensus on a wintertime gasoline option, both of these options appear as proposed control measures in the Task Force Report. In spite of the lack of clear consensus, the Task Force members do agree on the importance of increasing the stringency of wintertime gasoline standards.

The following table compares the costs and emission reduction benefits of the two gasoline formulations. It is important to note that both formulations have the same cost effectiveness (\$9,000 per ton for CO). However, the CBG Type 2 formulation provides about 60 percent more CO reductions than does the 30 ppm sulfur CBF Type I formulation.

COST-EFFECTIVENESS, PRODUCTION AND MILEAGE COSTS, AND EMISSION REDUCTIONS FROM REFORMULATED GASOLINE							
Description of Fuel	Emission Reductions (Metric tons/day - year 2004)			Incremental Production Cost (¢/gal)	Mileage Penalty (¢/gal)	Total Cost (¢/gal)	Cost Effective- ness (\$/metric ton)
	PM₁₀	PM_{2.5}	CO				
Cleaner Burning Gasoline (CBG) Type 1 with an Average Sulfur Content of 30 ppm (wintertime only)	1.8	1.6	19.7	4.6	0.2	4.8	9,000 ^b
CBG Type 2 with Current Wintertime Oxygenate and RVP Requirements (wintertime only)	2.1	1.8	32. ^a	7.6	0.7	8.3	9,000 ^b

a Calculated for the year 2001.

b \$/metric ton CO, year 2001.

ASSESSMENT OF URBAN HAZE BENEFIT OF REVISED FUEL STANDARDS

One difficulty in accurately assessing the urban haze benefits from these potential fuel measures is an underlying difference between two scientific approaches that have been used to characterize the chemical and physical make-up of the “brown cloud” itself. These two methodologies are:

- # Emission Inventory which counts in some detail the emission rate and composition of many contributing sources of emissions, including not only mobile sources, but stationary source combustion, industrial processes, natural and anthropogenic fugitive dust. The compiled inventory data provides an indirect measure of the contribution of each source category to urban haze effects.
- # Chemical Mass Balance (CMB) and Receptor Modeling which utilize ground level samples of the existing haze material, followed by analysis of its physical and chemical make-up. These analytical results are fitted to a variety of “source profiles” for internal combustion engines, industrial processes, natural fugitive dust, and many others. The CMB and Receptor Model provide an estimate of the contribution from each type of source profile using statistical analysis.

With respect to the predicted contribution of gasoline and diesel motor vehicle exhaust to urban haze, the two methods differ substantially. The regional Emission Inventory indicates that motor vehicles account for about 7 percent of the observed urban haze. Based on the CMB and Receptor Modeling approach, motor vehicles, both gasoline and diesel, appear to account for about 70 percent of the urban haze phenomena.

Resolution of this discrepancy would improve the confidence level for policy decisions. Because public and private resources are always limited, it is helpful to direct those resources to the largest contributors of the urban haze problem. However, one salient point not to be discounted is that adoption of either of the proposed gasoline standards (and/or the CARB Diesel measure) will deliver a reduction in urban haze. Of equal or greater importance is demonstration of CO attainment within the EPA-stipulated time frame.

Option 1 - Adopt Wintertime Gasoline Standards: Cleaner Burning Gasoline (CBG) Type 1 with an Average Sulfur Content of 30 Parts per Million (G2)

This measure applies to the following pollutants: VOCs, NO_x, CO, PM, HAPs & Urban Haze

Background and Description of Measure

On-road and non-road mobile sources are primary contributors of CO, VOC, NO_x, primary particulate matter, PM precursors and HAP emissions which cause the year-round particulate matter, elevated wintertime CO levels, summertime ozone problems and the “brown cloud” in Maricopa County. These emissions can be markedly reduced with the use of reformulated motor fuels.

This control measure would place a new restriction on Clean Burning Gasoline (CBG) Type 1 (Federal Phase II RFG look-alike) limiting sulfur content to 30 parts per million average, effective November 1 through March 31 of each year, beginning November 1, 2000. The measure would restrict winter season sales within Area A to this gasoline formulation. This control measure does not propose changes to the current Area A wintertime oxygenate requirements (i.e., 3.5 percent oxygen for ethanol blends, or 2.7 percent for MTBE blends) or the maximum sulfur limit of 500 ppm.

If this measure is implemented, mobile source emissions of CO during the winter season will be substantially reduced, along with lesser reductions in PM₁₀ and PM_{2.5}. This more stringent gasoline standard thus provides benefits related to CO attainment and mitigation of the “brown cloud.” A summary of the cost-effectiveness, emission reductions, and refining and mileage costs for each of the gasoline fuel formulations evaluated is shown in Exhibit ES-2 to the Evaluation of Gasoline and Diesel Fuel Formulations (MathPro, 1998). In this contractor report, costs due to increased production expenses and fuel mileage penalty were compared with emission reduction benefit.

Implementation Mechanism

The Legislature would need to revise ARS Title 41, Chapter 15, Article 6 to set the basis for the standards and authorize the Arizona Department of Weights and Measures (ADWM), in consultation with ADEQ, to adopt necessary rules to implement these standards. Further, ADEQ would be required to submit the program to EPA as a revision to the SIP, and acquire necessary waivers under §211(c)(4) of the Clean

Air Act. The program would become effective upon EPA's approval and granting of the waiver from federal preemption of states from setting standards for motor fuels. Once rules were adopted and approved, ADWM would enforce them under the existing motor fuel quality regulatory program.

Implementation of this measure also involves capital investment and lead time for alterations at refineries in the New Mexico/West Texas refining center. This is the most complex aspect of the proposed gasoline measure, and a source of uncertainty. During deliberations, refinery company representatives were, in general, more optimistic that this formulation could be delivered in sufficient quantities by the winter 2000 time frame, compared to CBG Type 2 formulations. The primary reason for this is the existing product mix supplied by the West Coast and New Mexico/West Texas refining centers. At this time, only the West Coast refineries have implemented the technology to produce CBG Type 2 gasoline.

Period Required for Implementation

The Evaluation of Gasoline and Diesel Fuel Formulations (MathPro 1998), indicated that most refiners could likely produce gasoline meeting the specifications of CBG Type 1 with an average sulfur content of 30 ppm by the winter of 2000-2001. This timeframe is based on the refiners undertaking necessary capital investments beginning April 1998, soon after legislative approval. To initiate this process, gasoline producers have emphasized that a clear signal regarding the mandated fuel program is necessary in order to acquire and commit the necessary capital resources.

Regulatory implementation of this program would also be expedited. ADEQ and ADWM, based on prior experience, could produce proposed rules through a stakeholder-driven process within two months of the effective date of the authorizing statute. The remainder of the State administrative process would take approximately another seven months. EPA's approval process would require a minimum of nine months.

Barriers to Implementation

As noted earlier, development of the production infrastructure is the most apparent barrier to implementing a more stringent gasoline standard. Individual refiners will likely be faced with additional capital, production, and substantial lead time in supplying the cleaner fuel. Further, the increased production costs of the low-sulfur CBG Type 1 fuel, while apparently modest on a per-gallon basis, result in large total costs for this measure.

Effectiveness of Measure

Modeling studies performed by MathPro (1998) indicate that the use of a gasoline meeting the specifications of CBG Type 1 with an average sulfur content of 30 ppm will reduce emissions as follows:

- # CO by 19.7 metric tons per day (mtpd) for the year 2001 and 16.6 mtpd for 2010
- # PM₁₀ by 1.8 mtpd for the year 2004 and 2.0 for mtpd 2010
- # PM_{2.5} by 1.7 mtpd for the year 2004 and 1.8 mtpd for 2010

Further, based on the Emission Inventory approach, ADEQ estimates that the reductions in these emissions will have a 0.74 percent reduction effect on mitigating urban haze for the year 2004. This estimate of potential urban haze impact based on Emissions Inventory methodology differs drastically from that predicted by the Receptor Modeling approach. This latter method is based on the concentrations of various haze constituents ADEQ has measured using ambient particulate monitors. Application of Receptor Modeling based on ambient sampling increases the apparent urban haze benefit by about ten-fold; i.e. urban haze may be reduced by about 2 percent in 2004.

Accuracy of Effectiveness Determination

The benefits and costs are described in the above referenced MathPro Report. In their analysis, they used a methodology that compares baseline emissions inventories for each pollutant with future region-wide emission rates obtained from EPA-accepted emissions models. Further, the future emissions estimates account for changing conditions, including improvements in average emissions from the introduction of more modern and less polluting on-road vehicles and off-road vehicles and equipment, and growth in traffic and population. As such, this approach parallels methods used by MAG and ADEQ for SIP development, which necessarily mirrors the uncertainties associated with those processes. Regardless, the effectiveness of this measure has been evaluated in a manner consistent with the state-of-the-art in modeling the emissions characteristics of a changing population of vehicles and off-road equipment.

Estimates of incremental production costs were developed by MathPro using a proprietary model (ARMS) which applies linear programming techniques to identify the least-cost options for refinery operation. This approach is based on sound engineering principles, and industry-specific expertise.

The impacts related to the brown cloud were evaluated by ADEQ. This effort was based on the methodology of the report entitled *The 1989-90 Phoenix Urban Haze Study: The Apportionment of Light Extinction to Sources* (Watson and Chow 1991). In this study the attribution to various sources of their contribution to overall light extinction (i.e., the loss of visibility due to urban haze) was accomplished with the Chemical Mass Balance Model, using analytical data from actual haze particulate sampling. Then, this information was used to calculate the light extinction contribution from each category. Using this

approach the portion of overall urban haze attributed to motor vehicles; gasoline- and diesel-fueled, is more than 75 percent.

Cost of Measure

According to the 1998 MathPro report cited earlier, the total incremental production cost at the refinery is 4.6¢/gal. Loss of fuel economy due to the use of this gasoline formulation could be as much as 0.2¢/gal. Thus, the total incremental cost including the fuel economy penalty is 4.8 ¢/gal. As noted in the MathPro report, there is little correlation between incremental refining costs and price at the pump. The consultant has estimated the cost effectiveness for the year 2001 at \$9,000 per metric ton CO emissions avoided.

As an additional consumer cost factor, the capability for the existing pipeline delivery infrastructure to deliver adequate supplies of this formulation with reduced sulfur was also discussed by the Fuels Subcommittee and the Task Force. The assessment provided to the Task Force is that the existing distribution system has the capability to deliver the required volumes of any of the proposed wintertime gasoline formulations. The difference between the CBG formulations delivered to Maricopa County and conventional gasoline provided to the remainder of the state could lead to quality “spill over.” This means that the cleaner burning fuel may be sold outside the county due to distribution factors. However, this is occurring with the current Maricopa County unique fuel formulations used now, so adoption of a new fuel standard should not lead to a significant increase in cost to the remainder of the State.

Affected Parties

- # EPA
- # ADEQ and Arizona Department of Weights and Measures (ADWM)
- # Petroleum refiners, marketers, and pipeline operators
- # Owners of motor vehicles and non-road equipment

Option2 - Adopt Wintertime Gasoline Standards: Cleaner Burning Gasoline (CBG) Type 2 with the Current Wintertime Oxygenate and Reid Vapor Pressure (RVP) Requirements (G4)

This measure applies to the following pollutants: VOCs, NO_x, CO, PM, HAPs & Urban Haze

Background and Description of Measure

On-road and non-road mobile sources are primary contributors of CO, VOC, NO_x, primary particulate matter, PM precursors and HAP emissions which cause the year-round particulate matter, elevated wintertime CO levels, summertime ozone problems and the “brown cloud” in Maricopa County. These emissions can be markedly reduced with the use of reformulated motor fuels.

This control measure would require the adoption of CBG Type 2 fuel specifications. This control measure also maintains the current Area A wintertime Reid Vapor Pressure (RVP) and oxygenate requirements (i.e., 3.5 percent oxygen). This more stringent fuel standard would be effective in Area A from November 1 through March 31 of each year beginning November 1, 2000.

If CBG Type 2 fuel is implemented, mobile source emissions of CO during the winter season will be substantially reduced, along with lesser reductions in PM10 and PM2.5. This more stringent gasoline standard thus provides the largest benefit of all measures considered toward achieving CO attainment as will be required in the serious area plan. Also, this fuel measure offers benefits in reducing urban haze.

A summary of the cost-effectiveness, emission reductions, and refining and mileage costs for each of the gasoline fuel formulations evaluated is shown in Exhibit ES-2 to the Evaluation of Gasoline and Diesel Fuel Formulations (MathPro 1998). In this contractor report, costs due to increased production expenses and fuel mileage penalty were compared with emission reduction benefit.

Implementation Mechanism

The Legislature would need to revise ARS Title 41, Chapter 15, Article 6 to set the basis for the standards and authorize the Arizona Department of Weights and Measures (ADWM), in consultation with ADEQ, to adopt necessary rules to implement these standards. Further, ADEQ would be required to submit the program to EPA as a revision to the SIP, and acquire necessary waivers under §211(c)(4) of the Clean Air Act. The program would become effective upon EPA's approval and granting of the waiver from

federal preemption of states from setting standards for motor fuels. Once rules were adopted and approved, ADWM would enforce them under the existing motor fuel quality regulatory program.

Implementation of this measure also involves capital investment and lead time for alterations at refineries in the West Coast and New Mexico/West Texas refining centers. This is the most complex aspect of the proposed gasoline measure, and a source of uncertainty. During deliberations, refinery company representatives were not optimistic that the CBG Type 2 formulations could be delivered in sufficient quantities by the winter 2000 time frame. At present, only the West Coast refining centers are configured to produce the CBG Type 2 gasoline. The New Mexico/West Texas refining centers do not produce the CBG Type 2 fuel, and would need even greater commitment of capital resources to continue to supply the Maricopa County market.

Period Required for Implementation

The Evaluation of Gasoline and Diesel Fuel Formulations (MathPro 1998), indicated that under “business-as-usual” conditions refiners could likely deliver gasoline meeting the specifications of CBG Type 2 with the current oxygenate and RVP requirements by the winter of 2001-2002. This timeframe is based on the refiners undertaking necessary capital investments beginning April 1998, soon after legislative approval.

Gasoline producers have emphasized that a clear signal regarding the mandated fuel program is necessary in order to acquire and commit the necessary capital resources. To meet the time frame of general CBG Type 2 availability by November 2000 would require an accelerated effort, that would be above and beyond the “business-as-usual” assumption.

Regulatory implementation of this program would also be expedited. ADEQ and ADWM, based on prior experience, could produce proposed rules through a stakeholder-driven process within two months of the effective date of the authorizing statute. The remainder of the State administrative process would take approximately another seven months. EPA's approval process would require a minimum of nine months.

Barriers to Implementation

As noted earlier, development of the production and delivery infrastructure is the most apparent barrier to implementing the CBG Type 2 gasoline standard. Based on statements made by industry representatives, all refiners will be faced with additional capital, production, and substantial lead time in supplying the cleaner fuel. Further, the production costs of the low-sulfur CBG Type 2 fuel are estimated to be 65 percent higher than for CBG Type 1 (MathPro 1998). As a result, the total cost and effectiveness for this measure are relatively higher than for CBG Type 1.

Unlike the CBG Type 1 fuel option, the New Mexico/West Texas regional refining center will likely lag behind the West Coast in capability to produce CBG Type 2 fuel. As presented in the contractor analysis (MathPro, 1998), the eastern refineries will have higher production costs and investment, relative to West Coast refineries, to introduce the technology needed to produce CBG Type 2 gasoline. Therefore, it should not be assumed the competitive benefit of having two distinct supply sources will be present at the transition to CBG Type 2. Overall, the consumer price effect of this proposed gasoline standard cannot be reasonably predicted.

Effectiveness of the Measure

The use of gasoline meeting the specifications of CBG Type 2 with the current oxygenate and RVP requirements reduces emissions as follows:

- # CO by 32.7 metric tons per day (mtpd) for the year 2001 and 28.3 mtpd for 2010
- # PM₁₀ by 2.1 mtpd for the year 2004 and 2.3 for 2010
- # PM_{2.5} by 1.8 for the year 2004 and 2.0 mtpd for 2010

Further, based on the Emission Inventory approach, ADEQ estimates that the reductions in these emissions will have a 0.87 percent reduction effect on mitigating urban haze for the year 2004. This estimate of potential urban haze impact based on Emissions Inventory methodology differs drastically from that predicted by the Receptor Modeling approach. This latter method is based on the concentrations of various haze constituents ADEQ has measured using ambient particulate monitors. Application of Receptor Modeling based on ambient sampling increases the apparent urban haze benefit by about ten-fold; i.e., urban haze may be reduced by about 2.5 percent in 2004.

Accuracy of Effectiveness Determination

The benefits and costs are described in the above referenced MathPro report. In their analysis, they used a methodology that compares baseline emissions inventories for each pollutant with future region-wide emission rates obtained from EPA-accepted emissions models. Further, the future emissions estimates account for changing conditions, including improvements in average emissions from the introduction of more modern and less polluting on-road vehicles and off-road vehicles and equipment, and growth in traffic and population. As such, this approach parallels methods used by MAG and ADEQ for SIP development, which necessarily mirrors the uncertainties associated with those processes. Regardless, the effectiveness of this measure has been evaluated in a manner consistent with the state-of-the-art in modeling the emissions characteristics of a changing population of vehicles and off-road equipment.

Estimates of incremental production costs were developed by MathPro using a proprietary model (ARMS) which uses linear programming techniques to identify the least cost options for refinery operation. This approach is based on sound engineering principles, and industry-specific expertise.

The impacts related to the "brown cloud" were evaluated by ADEQ. This effort was based on the methodology of the report entitled *The 1989-90 Phoenix Urban Haze Study: The Apportionment of Light Extinction to Sources* (Watson and Chow 1991). In this study the attribution to various sources their contribution to overall light extinction (i.e., the loss of visibility due to urban haze) was accomplished with the Chemical Mass Balance Model, using analytical data from actual haze particulate sampling. Then, this information was used to calculate the light extinction contribution from each category. Using this approach the portion of overall urban haze attributed to motor vehicles; gasolines and diesel-fueled, is more than 75 percent.

Cost of Measure

According to the consultant report (MathPro 1998) the total incremental production cost at the refinery is 7.6¢/gal. Loss of fuel mileage performance due to the use of this gasoline formulation could be as much as 0.7¢/gal. Thus, the total incremental cost including the fuel economy penalty is 8.3¢/gal. As noted in the MathPro report, because of market forces there is not necessarily a direct correlation between incremental refining costs and price at the pump. The consultant has estimated the cost effectiveness for \$9,000 per metric ton CO for the year 2001.

As an additional consumer cost factor, the capability for the existing pipeline delivery infrastructure to deliver adequate supplies of CBG Type 1 with reduced sulfur was also discussed by the Fuels Subcommittee and the Task Force. The assessment provided to the Task Force is that the existing distribution system has the capability to deliver the required volumes of any of the proposed wintertime gasoline formulations. The difference between the CBG formulations delivered to Maricopa County and conventional gasoline provided to the remainder of the state could lead to quality "spill over". This means that the cleaner burning fuel may be sold outside the county due to distribution factors. However, this is occurring currently with the CBG Type 1 fuel used now, so adoption of a new fuel standard should not lead to a significant increase in cost to the remainder of the state.

Affected Parties

- # EPA
- # ADEQ and Arizona Department of Weights and Measures (ADWM)
- # Petroleum refiners, marketers, and pipeline operators
- # Owners of motor vehicles and non-road equipment

Adopt Reformulated Fuel Standards: CARB Diesel (D7)

This measure applies to the following pollutants: VOCs, NO_x, CO, PM, HAPs & Urban Haze

Note: Appendix B contains a minority report regarding this measure.

Background and Description of Measure

On-road and non-road mobile sources are primary contributors of CO, VOC, NO_x, primary particulate matter, PM precursors and HAP emissions, which cause the year-round particulate matter, elevated wintertime CO levels, summertime ozone problems and the “brown cloud” in Maricopa County. These emissions can be markedly reduced with the use of reformulated motor fuels.

As recommended by the Task Force, this control measure would require that all diesel fuel sold for use in Area A, whether for on-road or non-road uses, conform to the specifications set under the CARB diesel fuel program (including either the formula properties or alternative formulations), effective May 1, 2000. This control measure is on the list of the most stringent PM₁₀ control measures implemented or in-practice in any PM₁₀ nonattainment area, (Sierra Research/Maricopa Association of Governments 1998).

Consequently, this measure or one similar to it for diesel fueled engines should be included in the serious area plan to be submitted to EPA in 1998. A summary of the cost-effectiveness, emission reductions, and refining and mileage costs for each of the diesel fuel formulations evaluated is shown in Exhibit ES-3 and 4 to the Evaluation of Gasoline and Diesel Fuel Formulations (MathPro 1998).

Implementation Mechanism

The Legislature would need to revise ARS Title 41, Chapter 15, Article 6 to set the basis for the standards and authorize the Arizona Department of Weights and Measures (ADWM), in consultation with ADEQ, to adopt necessary rules to implement these standards. Further, ADEQ would be required to submit the program to EPA as a revision to the SIP, and obtain necessary waivers under §211(c)(4) of the Clean Air Act. The program would become effective upon EPA's approval and granting of the waiver from federal preemption provisions that prevent states from setting standards for motor fuels under contain

circumstances. Once rules were adopted and approved, ADWM would enforce them under the existing motor fuel quality regulatory program.

Implementation of this measure also involves capital investment and lead time for alterations at refineries in the West Coast and New Mexico/West Texas refining centers. This is the most complex aspect of the proposed diesel fuel measure, and a source of uncertainty.

Period Required for Implementation

The Evaluation of Gasoline and Diesel Fuel Formulations (MathPro 1998), indicated that most refiners could likely produce diesel fuel meeting the specifications of CARB diesel fuel meeting either the formula properties or the alternative formulations by the summer of 2000. This timeframe is based on state rule making and EPA approval schedules, and the refiners undertaking necessary capital investments beginning April 1998, soon after legislative approval. In response to a mandate for CARB Diesel fuel, it is anticipated that the refining industry at large would tend to maneuver to supply the Maricopa County market. The assessment provided to the Task Force by MathPro indicates that minimal lead time for development of production capacity is two years from the date of the final statutory action.

It is anticipated that the schedule for rulemaking would also be accelerated to meet the proposed effective date for the use of CARB Diesel. ADEQ and ADWM, based on prior experience, could produce proposed rules through a stakeholder-driven process within two months of the effective date of the authorizing statute. The remainder of the State administrative process would take approximately another seven months. EPA's approval process would require a minimum of nine months.

Barriers to Implementation

As noted earlier, development of the production infrastructure is the most apparent barrier to implementing the CARB Diesel. Based on statements made by industry representatives, all refiners will be faced with additional capital, production and delivery costs and substantial lead time in supplying the Cleaner fuel in sufficient quantities. Further, the production costs of the low-sulfur CARB Diesel fuel are estimated to be 4 - 10 cents/gallon higher than for current diesel fuel supplies (MathPro 1998). As a result, the total costs, and cost effectiveness (i.e. cost per ton emission avoided) for this measure are relatively higher than for most Diesel standards considered by the Task Force.

Another barrier to successful acceptance of this measure, discussed at length during Task Force deliberations, is possible increased consumer price for the fuel. As in all geographic markets the interaction of many factors, ranging from the price of crude oil to customer amenities, affects the price of diesel fuel

in Maricopa County. On the whole, petroleum industry representatives agreed that a diesel fuel price increase is probable as a result of this measure, at least during a transition period after CARB Diesel is introduced. As more time passes, competitive pressures will encourage gasoline suppliers to adjust production to meet demand.

During deliberations, refinery company representatives emphasized the difficulties of providing the CARB Diesel formulation in sufficient quantities by the spring 2001 time frame. At present, only the West Coast refining centers are configured to produce CARB Diesel. Reportedly, the capacity of these installations cannot absorb the added demand from Maricopa County without substantial investment, modification, and environmental permitting. The New Mexico/West Texas refining centers do not produce the CARB Diesel, and would need even greater commitment of resources to introduce the appropriate technology and continue to supply the Maricopa County market.

Effectiveness of the Measure

The use of diesel fuel meeting the specifications of CARB diesel fuel will reduce emissions in the winter season as follows:

- # CO by 9.2 metric tons per day (mtpd) for the year 2004 and 11.3 mtpd for 2010
- # PM₁₀ by 1.4 mtpd for the year 2004 and 1.8 mtpd 2010
- # PM_{2.5} by 1.3 mtpd for the year 2004 and 1.7 mtpd for 2010
- # VOC by 4.3 mtpd for the year 2004 and 5.2 mtpd for 2010
- # NO_x by 3.8 mtpd for the year 2004 and 4.1 mtpd for 2010

Emission reductions for the summer season have been calculated as follows:

- # CO by 25.7 metric tons per day (mtpd) for the year 1999 and 39.7 mtpd for 2010
- # PM₁₀ by 1.4 mtpd for the year 1999 and 1.8 mtpd for 2010
- # PM_{2.5} by 1.3 mtpd for the year 1999 and 1.7 mtpd for 2010
- # VOC by 7.1 mtpd for the year 1999 and 10.1 mtpd for 2010
- # NO_x by 6.5 mtpd for the year 1999 and 7.9 mtpd for 2010

Further, based on the Emission Inventory approach, ADEQ estimates that the reductions in these emissions will have a 1.1 percent reduction effect on mitigating urban haze for the year 2004. This estimate of potential urban haze impact based on Emission Inventory methodology differs drastically from that predicted by the Receptor Modeling approach. This latter method is based on the concentrations of various haze constituents ADEQ has measured using ambient particulate monitors. Application of Receptor Modeling based on ambient sampling increases the apparent urban haze benefit by about ten-fold; i.e. (need greater specificity, more analysis) urban haze may be reduced by about 11 percent in 2004.

Accuracy of Effectiveness Determination

The benefits and costs are described in the above referenced MathPro Report. In their analysis, they used a methodology that compares baseline emissions inventories for each pollutant with future region-wide emission rates obtained from EPA-accepted emissions models. Further, the future emissions estimates account for changing conditions, including improvements in average emissions from the introduction of more modern and less polluting on-road vehicles and off-road vehicles and equipment, and growth in traffic and population. As such, this approach parallels methods used by MAG and ADEQ for SIP development, which necessarily mirrors the uncertainties associated with those processes. Regardless, the effectiveness of this measure has been evaluated in a manner consistent with the state-of-the-art in modeling the emissions characteristics of a changing population of vehicles and off-road equipment.

The emissions reductions may be underestimated because they do not reflect the use of diesel fuel by stationary sources.

It was pointed out that long-haul freight trucks have per tank range of over 1,500 miles. Therefore, it is reasonable to assume that a significant portion of such vehicles will avoid purchasing more costly CARB Diesel in Maricopa County. This fueling shift negates, to an unknown extent, the predicted emission abatement benefits. Based on current purchasing patterns, it was estimated in the MathPro analysis that 85 percent of the fuel consumed in Maricopa County is purchased in the area.

Estimates of incremental production costs were developed by MathPro using an engineering analysis to identify the least cost options for refinery operation. This approach is based on sound engineering principles, and industry-specific expertise.

The impacts related to the "brown cloud" were evaluated by ADEQ. This effort was based on the methodology of the report entitled *The 1989-90 Phoenix Urban Haze Study: The Apportionment of Light Extinction to Sources* (Watson and Chow 1991). In this study the attribution to various sources of their contribution to overall light extinction (i.e., the loss of visibility due to urban haze) was accomplished with the Chemical Mass Balance Model, using analytical data from actual haze particulate sampling. Then, this information was used to calculate the light extinction contribution from each category. Using this approach the portion of overall urban haze attributed to motor vehicles, gasoline- and diesel-fueled, is more than 75 percent.

Cost of Measure

According to the consultant report (MathPro, 1998) the total incremental refinery cost is between 4 and 10 ¢/gal, depending upon the mix of fuels meeting either formula or average CARB Diesel properties.

Similarly, the estimated loss of fuel mileage performance due to the use of this diesel fuel formulation may range from 1.1 to 2.4 ¢/gal. Thus, the total incremental cost including the fuel economy penalty is between 5.1 and 12.4 ¢/gal. As noted in the MathPro report, there is little correlation between incremental refining costs and price at the pump. The consultant has estimated the aggregated cost effectiveness for this control measure to range between \$3,000 and \$15,000 per metric ton considering all pollutants.

On the whole, petroleum industry representatives indicate that a consumer fuel price increase is probable with mandated CARB Diesel. Such an increase would affect different segments of the market to varying degrees. To the extent long-haul trucks have the ability to avoid higher priced CARB Diesel in Maricopa County, this segment may not bear a significant fuel cost increase. Thus the overall cost impact of this measure, and its affect on diesel retailers in Maricopa County, depends in part on the degree to which a fueling pattern shift occurs.

Short-haul local trucks and off-road diesel equipment would almost totally be converted to higher priced CARB Diesel. Currently, off-road diesel equipment (e.g. portable generators and compressors) may use a less expensive diesel grade that would be eliminated by adoption of CARB Diesel. Both of these market segments would bear the their entire share of the anticipated increases in diesel fuel price. As more time passes, competitive pressures would be expected to bring additional supplies to the market creating an eventual downward pressure in prices.

As an additional cost factor, the capability of the existing pipeline and delivery infrastructure to handle a new grade of diesel fuel was considered by MathPro and discussed by the Cleaner Burning Fuels Subcommittee and the Task Force. The primary issue relates to the ability to segregate Maricopa County CARB Diesel supplies from EPA low-sulfur diesel required for on-road use everywhere except for California and high-sulfur diesel used by non-road equipment (including train locomotives) in rural areas of the State. In the absence of adequate refiner, pipeline and fuels terminal tankage, the potential exists that CARB Diesel supplies for Maricopa County would supplant some of the EPA and high-sulfur diesel outside of Maricopa County (excess quality), resulting in increased costs to diesel users in the balance of the state. While MathPro did assess the potential for excess quality to be minimal, they were not able to conduct an in-depth analysis in their draft report. The final report contains a detailed analysis of this issue, which concludes that:

- # All of the supply of high-sulfur diesel is provided by West Texas/New Mexico refiners that produce very little on-road diesel to the Maricopa County market; i.e., the high-sulfur diesel supply system is distinct from that which supplies EPA diesel to Maricopa County. Consequently, sufficient break-out tankage exists to segregate high-sulfur diesel from on-road supplies, and it is very unlikely that adoption of a Maricopa County CARB Diesel standard will affect either high-sulfur diesel availability or the cost of providing high-sulfur diesel.

- # Additional refinery and terminal tankage may be necessary to segregate Maricopa County CARB Diesel from the EPA diesel that could be sold in the balance of the state. However, the cost differential between EPA and CARB diesels creates a strong economic incentive to finance, permit, and build the necessary tankage. Regardless of the development of sufficient breakout and storage tankage for CARB Diesel supplies, the potential for small quantities of CARB Diesel to spill over outside of Maricopa County exists.

Affected Parties

- # EPA
- # ADEQ and Arizona Department of Weights and Measures (ADWM)
- # Petroleum refiners, marketers, and pipeline operators
- # Owners of motor vehicles and non-road equipment

INTRODUCTION

The role of vehicles in urban air pollution has been well-documented. In the Maricopa Nonattainment Area, vehicles contribute approximately 80 percent of CO emissions, 25 percent of ozone forming VOC emissions from on-road mobile sources and a comparable amount from off-road mobile sources, and 80 percent of PM₁₀ emissions (including reintrainment). Malfunctioning vehicles routinely emit over five times the emissions of properly functioning vehicles. Pre-1980 vehicles account for about one-half of the emissions in the Maricopa Nonattainment Area, but are less than a third of the vehicle population and account for less than a fifth of the miles traveled in the area. Clearly, reducing the vehicular contribution to all three pollution problems will be key to improving the air quality here.

Prior to the 1990s, relatively little was known about the contribution of off-road engines. Today, we realize that this machinery makes a significant contribution. For example, mowing a lawn for an hour creates as much total pollution as driving a well-maintained 1993 model year car 2,000 miles.

In addition to enhancement to the IM 240 Program previously described, the Task Force recommends the nine measures presented on the following pages to assist in reducing emissions from these sources.

- # Task Force on Transit
- # Encourage Private Industry to Provide Effective Programs and Incentives to Enhance Trip Reduction
- # Vanpool—Transportation Demand Management
- # Extension and Expansion of the Voluntary Lawn Mower and Lawn Equipment Replacement Program
- # Implementation of the California Low Emission Vehicle (CA LEV) Program in Arizona
- # Voluntary Vehicle Repair, Retrofit, and Recycle Program
- # Voluntary Program to Inventory and Evaluate Diesel Equipment and Identify Options for Upgrading/Replacement of Equipment
- # Tiered Incentives Program Based on Emissions Level of Alternative Fueled Vehicles
- # LEV Standard for Government Alternative Fueled Vehicles
- # Adoption of Alternative Fuel Conversion Certification Standard

Task Force on Transit

This measure applies to the following pollutants: CO, PM₁₀, Ozone, Urban Haze

Background and Description of Measure

It is recommended that the Governor appoint a Task Force to assess transportation alternatives, including parking management, and recommend a comprehensive mass transit plan, including both public and private sector options, which could reduce the growth of vehicle miles traveled in the Phoenix urban area by reducing reliance on the single occupant vehicle. Membership would include representatives from state, local and regional government agencies, state legislators, stakeholders from major employers, businesses, industries, professional and community associations and the medical community.

The proposal to review options concerning improvements in transit was reviewed by the Governor's Transportation Task Force in 1996. Voters in the City of Tempe approved in 1997 an increase in their sales tax to underwrite expansion of transit within that city, while voters in the cities of Phoenix and Scottsdale rejected a similar transit measure. Transit alternatives are also being explored in the Maricopa Association of Government's "Vision 2025 Plan." A new Task Force would have the benefit of the MAG Plan, the experience gained by the successful and two unsuccessful transit measures, and additional research on transit issues conducted since the work done by the 1996 Task Force.

The Task Force on Transit's mission would include the following:

- # review of current regional and local plans, and those of other similar metropolitan areas to identify workable options for our area
- # development of plans and strategies to address our region's deficiencies
- # identification of funding options—both private and public—to implement strategies
- # identification of champions to garner support for measures
- # development of marketing strategies to build support among the media, policy makers, and Valley interest groups

preparation of a Final Report to be submitted to the Governor by January 1999

Maricopa County is the second fastest growing metropolitan area in the nation, is the seventh largest metropolitan area in the country, and has only the 34th largest transit system. Vehicle miles traveled (VMT) are increasing faster than the rate of population growth and the current transit system is inadequate to contribute significantly to solving the air pollution problem.

From 1995 to 2017, resident population in Maricopa County is expected to increase 70 percent, while regional travel is expected to increase 80 percent. In response to this growth, the MAG Long Range Transportation Plan calls for a 69 percent increase in freeway lane miles, a 57 percent increase in street miles, and a doubling of bus service in the same time period; however, even if these system expansions are provided, congestion will increase.

The percentage of total freeway lane miles which are congested at peak hour will almost double, from 18 to 34 percent. Total hours of delay due to congestion will increase from 42,000 to 96,000 in the PM peak hour alone. If the planned expansions do not take place, the outcome is even more dire. For example, total hours of delay in the PM peak hour will increase from 42,000 to 287,000 rather than the 96,000 cited above. It is clear from the above, that even with significant improvements to our transportation systems, congestion will increase in the area. We simply cannot afford an attempt to build our way out of congestion.

Implementation Mechanism

Implementation of this measure would require executive action by the Governor. Funding may need to be appropriated from the general fund but can probably be obtained from funds already appropriate to the affected state agencies.

Period Required for Implementation

Would commence following creation by Governor.

Barriers to Implementation

None.

Effectiveness of Measure

The study would keep discussion of the transit issue a priority among Valley stakeholders. More than 75 percent of carbon monoxide emissions are caused by vehicles. This could be significantly reduced if alternatives to the single occupant vehicle were expanded.

Accuracy of Effectiveness Determination

Not Applicable.

Cost of Measure

Facilitation of such an effort and development and reproduction of the document output could cost up to \$200,000 if a professional consultant were retained.

Affected Parties

All Maricopa County residents and visitors.

Encourage Private Industry to Provide Effective Programs and Incentives to Enhance Trip Reduction

This measure applies to the following pollutants: CO, PM₁₀, Ozone, Urban Haze

Background and Description of Measure

This measure would allow employers participating in TRPs in Areas A and B a 50 percent tax credit of actual costs or up to \$100,000 for subsidizing employees' public or private transit or vanpool fares or carpool expenses or for installing bike racks or lockers for employee use. This tax credit would be available to corporations, partnerships, single proprietorships, and shareholders of a Subchapter S corporation. The credit may not exceed the amount of taxes otherwise due; however, the taxpayer may carry forward any credit up to five years. Under the proposed measure, the credit would be provided in lieu of any other credit or deduction.

This measure would also allow a one-time only 25 percent tax credit, or up to \$15,000, whichever is less, for actual costs of telecommuting equipment purchased and owned by the employer and used for telecommuting purposes by the taxpayer's employee. Allowable equipment would include computer hardware and software, modems, telephones (or installation costs) that enable the employee of the taxpayer to perform the employee's normal employment duties at home instead of at the workplace. This would exclude the purchase or replacement of equipment if the taxpayer's main business is in the taxpayer's home.

To qualify, the taxpayer would be required to participate in a mandatory TRP and include all activities for which the credit is claimed in the approved TRP plan or voluntarily complete the TRP plan format documenting these activities. Maricopa County has an ongoing monitoring program that verifies that employers are implementing measures in the approved TRP plans. This program will also help prevent abuse of the claims taken under this tax credit.

The following states have similar tax credit legislation: California, Connecticut, Delaware, Oregon, Washington, and New Jersey. An in lieu of taxes provision would allow some utilities to take advantage of this via the voluntary in lieu of payments they make to the state.

One of the recent phone surveys done by the Regional Public Transportation Authority (RPTA) asked the general public about possible solutions to the Valley's air pollution and traffic problems. Providing

employertaxcredits to employers who subsidize employees for taking the bus, vanpool, or carpool ranked second (after improving the Valley' s bus system), with 77 percent of respondents agreeing.

Implementation Mechanism

This measure will require an amendment to the state tax code. Employers would be encouraged to adopt these strategies and help finance private or publicly provided transit, vanpools, carpools; install bike facilities to encourage use; and, start telecommuting programs.

Period Required for Implementation

This measure would be effective 90 days after enactment. A sunset provision after five years would allow time to evaluate the impacts.

Barriers to Implementation

Preventing abuse of the credit, especially for telecommuting equipment, is the most significant barrier to implementation. A certification form and process would be set up whereby Maricopa County would certify the proper use of funds for the intended purposes and an approvable TRP plan would have to document that any measure claimed for a credit is in the plan and is being implemented. This is done in Oregon, where a tax credit is available for telecommuting equipment. The same procedures could be adapted for use in Arizona. Guidelines would outline how and under what circumstances the employers could take advantage of these credits.

Currently, private bus service is not subsidized, and this credit may allow for more innovative solutions to transit (e.g., APS new express bus service), as well as encourage private subsidies of all alternative modes and telecommuting equipment, which have been proven elsewhere to be effective.

Another barrier would be loss of tax revenue.

Effectiveness of Measure

This measure is designed to encourage more small and medium-sized employers to provide effective financial incentives to their employees to participate in programs that will reduce commuting emissions. The potential effectiveness of this measure is difficult to estimate, because participation would be voluntary.

Using \$25 per employee per month subsidy as an example, over 12,000 employees would benefit. If half of those were “new” users, the impact would be as follows:

<u>New Users/ Participants</u>	<u>Vehicle Miles Reduced</u>	<u>Pounds Pollution Reduced</u>	<u>Tons Pollution Reduced</u>	<u>Cost/Ton Saved</u>
6,000	36.7 million	1,468,800 Lbs.	734 Tons	\$1,226 - 2452/Ton

(12,000 “users” / 2 (new users)=6,000 x 24 miles roundtrip/day x 255 workdays = 36,720,000 miles reduced / 25 miles per pound of pollution = 1,468,800 pounds or 734 tons reduced).

Accuracy of Effectiveness Determination

Not applicable.

Cost of Measure

Costs for this measure were developed by first using actual amounts of funds currently being spent in Maricopa and Pima counties by private sector employers involved in the TRP, and then projecting a 50 percent to 500 percent increase in participation due to the credit and calculating a 50 percent credit. At an estimated \$900,000 fiscal impact, the cost to the employers would be \$1.8 million (with a 50 percent credit).

Affected Parties

Employers and employees who would benefit from the incentives provided.

Vanpool - Transportation Demand Management

This measure applies to the following pollutants: CO, PM₁₀, Ozone

Background and Description of Measure

Transportation demand management improvements enhance peak period commuting by increasing vehicle occupancies, decreasing congestion, and improving air quality. **This measure proposed additional funding to provide additional incentives for vanpools.**

There are 128 Valley Metro vanpools operating each workday in the urban area. Vanpooling has been in a growth mode as more employers relocate, build, or reside in areas with limited or no bus service. Vanpooling often increases the labor market for employers, can assist in the welfare to work effort, and is very cost-efficient since the driver is a member of the vanpool group. The Valley Metro regional vanpool program could expand to serve this increased interest with additional monies for subsidy of additional vans.

The Valley Metro Vanpool Program utilizes vans leased from VPSI, Inc. This firm, a former subsidiary of Chrysler, supplies the vans, insurance, and maintenance through a turnkey 30-day agreement with the vanpool driver. Funding which would allow the vanpool fleet to expand is sought. The recommended duration of this project is two years.

Implementation Mechanism

Legislative appropriation.

Period Required for Implementation

Would be effective after passage.

Barriers to Implementation

None

Effectiveness of Measure

The measures could reduce single occupant vehicle mileage by up to 12,762,495 miles per year. This would achieve pollution reduction of up to 258 tons per year.

Accuracy of Effectiveness Determination

Costs were projected using anticipated costs for the next two years, based on historical costs of such services.

Cost of Measure

The measure would cost \$500,000 per year. It is proposed that two years of operation be funded to develop and demonstrate support. The cost of pollution reduction in these measures is \$1,938 per ton.

Affected Parties

Vanpool passengers would pay a monthly fare that is much lower than the cost of commuting by single occupant auto. This would encourage more commuters to consider trying a new mode of travel. Employers would realize an expanded labor market for employees and find them more productive due to less commute-induced stress.

Units of Service	Riders/Day	Cost/Year	Annual VMT Reduced	Pollution Reduction	Cost/Ton
83 van pools	830	\$500,000	12,762,495 miles	258 tons	\$1,938

Vanpools average 10 riders and average 67 miles roundtrip per day.

Extension and Expansion of the Voluntary Lawn Mower and Lawn Equipment Replacement Program

This measure applies to the following pollutants: VOCs, NO_x, CO, PM₁₀, HAPs, Urban Haze

Background and Description of Measure

Lawn mowers and other gasoline-powered lawn and garden equipment have virtually no emission control equipment for any criteria air pollutants. In California, CARB implemented Tier I emission controls for CO, total hydrocarbons, and NO_x. These controls commenced with 1995 model year mowers, and will be even more stringent when Tier II controls are effective in 1999. CO emissions from this source will be reduced by as much as 65 to 70 percent.

The Task Force has determined that a three year extension and expansion of Maricopa County's current Voluntary Lawn Mower Emissions Reduction Program would further reduce emissions. The program extension would continue to retire an estimated 2,000 residential mowers and 1,000 commercial mowers each year through the year 2000, while also expanding the program to include other gasoline-powered lawn and garden equipment.

Commercial businesses, cities, and municipalities operate lawn mowers and other landscape equipment as much as 40 to 60 hours per week. Residential users operate lawn mowers and other landscape equipment as much as 1 or 2 hours per week. Although a lawn mower replacement program could be applied to both commercial and residential sectors, the commercially focused component of the program is expected to yield the greatest benefits.

Implementation Mechanism

Recent lawn mower replacement pilot programs by Salt River Project, APS, and WSPA indicate that a full program could be implemented successfully. Such a program would require the approval of the Arizona Legislature as a SIP measure. The buyback of older lawn mowers could be administered through local lawn mower retailers, with oversight and coordination provided by Maricopa County or another governmental agency.

Period Required for Implementation

This program could be operational with months following the Legislature's approval, depending upon the availability of program funding sources.

Barriers to Implementation

Cost and making the availability of the program known to the affected population.

Effectiveness of Measure

EPA, CARB, and the South Coast Air Quality Management District (SCAQMD) have all completed testing programs to quantify the emissions of uncontrolled lawn mowers. Based on data developed for these programs, CO emission reductions could be very significant. Off-road mobile CO emissions in Maricopa County have previously been estimated in 1995 at 108 TPD, and may be understated. Lawn mowers and other gasoline-powered lawn and garden equipment are believed to be a significant portion of off-road mobile emissions. Sierra Research has estimated that a 2,000 lawn mower per year program, based on EPA's estimated emission factors, could reduce emissions of CO by .66 TPD and VOCs by 2.86 TPD. Expansion of the program to include more commercial mowers, residential mowers, and gasoline-powered lawn and garden equipment would further reduce emissions.

Accuracy of Effectiveness Determination

Effectiveness was determined by studies conducted by outside parties. The Task Force relied upon these reports but the conclusions contained in the reports could not be independently verified.

Cost of Measure

Depending upon the emission reduction methodology used, the cost effectiveness for such a program could be as much as \$3,964 per ton of CO emissions eliminated \$1,227 per ton of VOC emissions. Expansion of the program to include more commercial mowers, residential mowers, and other gasoline-powered lawn and garden equipment should significantly increase the cost effectiveness of the program. The cost to operate the expanded buyback program will be \$1,000,000 annually from the General Fund.

Affected Parties

- # Owners of domestic and commercial lawn and garden equipment.
- # Arizona taxpayers

Implementation of the California Low Emission Vehicle (CA LEV) Program in Arizona

This measure applies to the following pollutants: VOCs, NO_x, CO, PM₁₀, Urban Haze

Note: Appendix B contains a minority report regarding this measure.

Background and Description of Measure

This measure recommends the adoption of the California Low Emission Vehicle (CA LEV) program in Arizona. However, the Task Force does not recommend the mandatory requirement for the sale of zero emission vehicles (ZEVs). Instead the sale of ZEVs will be encouraged through the incentives either currently in place or described as a measure in this report. As described here, this measure would provide significant air quality benefits for the Maricopa County nonattainment area, as well as other areas of the State.

The California LEV program was adopted by California in 1990 in an effort to reduce air pollution in the state. The program requires the sale of vehicles meeting California's transitional low-emission vehicle (TLEV), low-emission vehicle (LEV), ultra low-emission vehicle (ULEV) and zero emission vehicle (ZEV) tailpipe emission standards. The program is applicable to vehicles with a gross vehicle weight rating (GVWR) at or below 14,000 pounds. However, none of the states that currently have adopted CA LEV programs, including Massachusetts and New York, regulate trucks over 6,000 pounds GVWR.

In addition to the vehicle tailpipe emission standards, vehicle manufacturers are required to comply with a fleet average non-methane organic gas (NMOG) standard¹. This allows manufacturers flexibility in choosing which models they wish to produce in order to meet the standards. Additional requirements include separate emission standards for trucks and medium-duty vehicles. Trucks must also meet a declining fleet average that is less stringent than that for passenger cars while medium-duty vehicles must certify a specified percentage of LEVs and ULEVs each year. Emission standards for medium duty vehicles must be adopted by Arizona separately and would increase the complexity of administering the CA LEV program.

¹ The CA LEV fleet average NMOG standard for PCS and LDTs declines from 0.070 g/mi for model year (MY) 2001 to 0.062 g/mi for MY 2003. For LDT2s, the fleet average NMOG standard declines from 0.098 g/mi for MY 2001 to 0.093 g/mi for MY 2003.

The only specific mandate in the CA LEV program applies to ZEVs. In California, 10 percent of the vehicles produced by manufacturers must be ZEVs beginning in 2003. However, states adopting the CA LEV program standards have the option of not mandating the sale of ZEVs, which is the option we have recommended.

Synergistic benefits are obtained when vehicles meeting the CA LEV requirements utilize reformulated gasolines. The certification of a vehicle under the CA LEV program incorporates the use of California Phase 2 reformulated gasoline (RFG). Therefore, Arizona or other states using gasoline other than California Phase 2 RFG would have a lower emission reduction benefit.

In addition to the current regulatory requirements of the CA LEV program, California has plans to propose new, more stringent standards that, if adopted, would be phased in effective with model year 2004 vehicles (known as CA LEV II). The proposal presently includes lowering light- and medium-duty truck standards to passenger car levels, lowering the LEV and ULEV NO_x standards to 0.05 g/mile, and the promulgation of a zero evaporative emission standard. This proposal is scheduled for presentation to the California Air Resources Board in November 1998.

During deliberations, the Low Emission Vehicle Subcommittee and the Task Force discussed the advantages of the implementation of the CA LEV program over the federal NLEV program. The NLEV program is predicated on acceptance by 12 states plus the District of Columbia in the northeastern United States and adoption by major vehicle manufacturers. Although emission reduction estimations performed by Air Improvement Resource, Inc., (contractor to General Motors) and confirmed by ADEQ showed that the NLEV and CA LEV programs had substantially similar emission reductions (see attached table), many of the Task Force members believe that the CA LEV program will be more effective in delivering emission reductions and consequent benefit on urban haze in Maricopa County. This belief is based on several factors:

- # The CA LEV program includes requirements for medium duty vehicles (6,000 - 14,000 pounds GVWR, including sport utility vehicles) which are a growing percentage of the automobile market, and which are not covered in the NLEV program;
- # The CA LEV program is an existing program that is operating in three states (California, Massachusetts, and New York);
- # The CA LEV II standards, if adopted, will provide another tier of more stringent standards to address emission reductions from new vehicles. Implementing the CA LEV program can be the first step toward the more stringent measures in the CA LEV II program, which may be necessary for Maricopa County to demonstrate attainment with National Ambient Air Quality Standards;

- # Vehicles meeting the CALEV standards are available for sale immediately although mandatory sales are not required until model year 2001.

Emission modeling has indicated that in order for Maricopa County to demonstrate attainment with the national ambient air quality standards, it would have to reduce NO_x emissions by as much as 70 percent. Even though NLEV will help Arizona to go a long way toward this goal, the more stringent standards of the LEV II program may be necessary.

Manufacturers had until February 17, 1998, to accept or decline the proposal. By February 6, 1998, six vehicle manufacturers had agreed to participate, representing about 90 percent of vehicle sales in the United States. Vice President Gore and upper EPA management issued statements congratulating the vehicle manufacturers on implementation of this voluntary emission reduction program. EPA has until March 2, 1998, to declare NLEV in effect.

Implementation Mechanism

Legislative action would be required for the implementation of the CA LEV program. The authority for the adoption of the CA LEV standards is contained in Section 177 of the Clean Air Act, which provides a two-year lead time for automobile manufacturer compliance with the CA LEV emission standards.

Additionally, ADEQ will be required to perform an equivalency demonstration and apply for a waiver to implement the CA LEV program instead of the Clean Fuel Fleet Program.

Period Required for Implementation

Based on the two-year lead time required by the Clean Air Act, the earliest possible date for implementation of the CA LEV program would be model year 2001.

Barriers to Implementation

- # Adoption of the California program requires legislative action.
- # Implementation of the program would require one or two additional state personnel to administer the program and there could be minimal costs to ADOT/Motor Vehicle Division for personnel training to ensure that only new California-certified vehicles are sold in the state. Auto dealers could be faced with an increased administrative burden.

- # Consumers would have an increased cost for vehicle purchase and the potential for reduced model availability². This may be mitigated due to Arizona's proximity to California since manufacturers will be able to deliver vehicles to Arizona. Fleet average emissions may differ between Arizona and California due to sales mix differences, leading to a potential need to restrict model availability in order to meet the fleet average requirements in Arizona.
- # All future regulatory action would be conducted by California, and the resultant rules and costs would not be under Arizona control (it should be noted that Arizona has little or no control over federal rules governing the NLEV program either). Arizona would, however, be required to periodically update their rules to incorporate applicable changes with the California program.
- # The emission standards for medium duty vehicles (6,001 to 14,000 pound GVWR) must be adopted by Arizona separately and would increase the complexity of administering the CA LEV program.

Effectiveness of Measure

Emission reduction estimates for the implementation of the CA LEV and NLEV programs in Arizona were calculated by the Air Improvement Resource, Inc., and verified by Arizona Department of Environmental Quality.³

As shown in the attached table, by the year 2005, the severe area ozone nonattainment deadline, it is estimated that implementation of these programs will reduce on-road emissions of on-road gasoline powered vehicles: VOCs by 5.1 (NLEV) to 5.3 (CA LEV) percent, NO_x by 6.1 percent, and CO by 9.1 percent. This equates to a reduction of 4.30 metric ton per day (tpd) of VOCs, 9.36 metric tpd of NO_x, and 95.01 metric tpd of CO. By the year 2015, the emission reductions are estimated to be 30 percent for VOCs, 29.3 percent for NO_x, and 38 percent for CO, which equates to 20.13 metric tpd VOCs, 48.72 metric tpd NO_x, and 363.09 metric tpd CO.

Additionally, it should be noted that although attainment of the NAAQS for CO may be demonstrated without CA LEV, the implementation of this measure will be an important maintenance strategy.

² EPA estimates that the increased cost to manufacturers ranges from \$72 to \$145 per new vehicle for compliance with CA LEV and \$53 to \$125 for compliance with NLEV. The current cost to new vehicle consumers in New York and Massachusetts is \$170 per vehicle. This added cost is for the additional hardware and engineering required for compliance with the CA LEV standards.

³ ADEQ memorandum from Peter Hyde to Gary Neuroth, January 2, 1998.
Slide presentation by Tom Darlington of Air Improvement Resource, Inc., December 18, 1997.

Although a significant decrease in primary PM₁₀ emissions is not anticipated due to the implementation of the CA LEV program, benefits to PM₁₀ and brown cloud pollutants will be observed due to the reduction of NO_x and VOCs, which contribute to the formation of secondary PM.

The emission reduction benefits presented in the attached table incorporate the following assumptions:

- # The analysis does not include any reductions associated with the CA LEV II program or the Federal Tier 2 program;
- # The analysis does not include reductions associated with the use of ZEVs;
- # Emission reduction benefits for the CA LEV program were limited to vehicles of 8,500 pounds or less GVWR, while the program as implemented in California applies to vehicles with a GVWR equal to or less than 14,000 pounds;
- # The LEV benefits in the NLEV program were applied to trucks of 6,001-8,500 pounds GVWR, although the program is limited to 6,000 pounds GVWR. Analysis by ADEQ indicated that these emission reductions appeared to be insignificant based on limited vehicles in this vehicle category class;
- # The zero-mile emission standards used in the model appear inconsistent with the 50,000 mile standards published by the programs; and
- # The analysis does not attempt to reflect changes in fleet vehicle distribution after the year 2005.

Accuracy of Effectiveness Determination

The emission reductions from the CA LEV program and NLEV program were calculated by AIR, Inc. and verified by ADEQ using the EPA model, MOBILE5a.

Cost of Measure

According to a report released by the California Air Resources Board in November 1996, the cost of LEVs to manufacturers would range from \$72 - \$145 per vehicle in California.⁴ It is important to note that

⁴ This cost could be reduced if other states adopt the California program because it would allow manufacturers to achieve economies of scale.

manufacturers regularly increase the price of vehicles each year by an amount commensurate with these figures and that this cost does not necessarily reflect a price-to-consumer increase.

For example, the introduction of California TLEVs into the New York market has not resulted in price mark-ups. In addition, Honda introduced the first gasoline ULEV in California in September 1997 with no additional mark up to the consumer. Manufacturers have indicated that the current charge for vehicles meeting the California emission standards in New York and Massachusetts is about \$170 per new vehicle purchase. This charge is associated with the hardware and engineering costs to manufacturers.

In addition to the consumer cost for the vehicles, the State would incur cost for the administration of the program. ADEQ estimates that 1 or 2 additional staff personnel would be required at a cost of approximately \$100,000 for program administration. ADOT estimates that minimal costs would be associated with the implementation of this program for training of personnel.

Affected Parties

- # Automobile manufacturers
- # Purchasers of new automobiles
- # MVD
- # ADEQ
- # Automobile dealers

**Comparison of the National (NLEV) and
California (CA LEV) Low-Emission Vehicle Programs**

**Annual Percentage Reduction in Overall Emission Rate (grams/vehicle mile traveled)
for Gasoline On-Road Vehicles**

	National-LEV			California-LEV		
	VOC	CO	NO _x	VOC	CO	NO _x
1996	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0
1999	0.0	0.0	0.0	0.0	0.0	0.0
2000	0.1	0.1	0.0	2.0	0.1	0.0
2001	0.4	0.8	0.7	0.4	0.8	0.7
2002	1.1	2.1	1.3	1.1	2.1	1.3
2003	2.0	3.8	2.4	2.1	3.8	2.4
2004	3.2	5.8	4.0	3.3	5.8	4.0
2005	5.1	9.1	6.1	5.3	9.1	6.1
2006	7.7	12.8	8.8	8.0	12.8	8.8
2007	10.8	16.8	11.9	11.1	16.8	11.9
2008	14.3	21.2	15.2	14.7	21.2	15.2
2009	17.9	25.4	18.5	18.4	25.4	18.5
2010	21.1	29.0	21.5	21.6	29.0	21.5
2011	23.4	31.6	23.7	23.9	31.6	23.7
2012	25.0	33.4	25.3	25.6	33.4	25.3
2013	26.4	34.9	26.7	27.1	34.9	26.7
2014	27.8	36.4	28.0	28.5	36.4	28.0
2015	29.4	37.9	29.3	30.1	37.9	29.3
Avg. (2000 - 15) difference in percent emission rate reduction				0.47	0	0

Voluntary Vehicle Repair, Retrofit, and Recycle Program

This measure applies to the following pollutants: VOCs, NO_x, CO, PM₁₀, HAPs, Urban Haze

Background and Description of Measure

Numerous studies, including a recent 1994 CARB pilot study, conclude that a relatively small number of vehicles have a disproportionate impact on air quality, including vehicles that are not well maintained.

The Task Force recommends a voluntary vehicle repair, retrofit and recycle (VVERRR) program in Maricopa County to provide vehicle owners with the option of voluntarily repairing, retrofitting, or recycling their high-emitting vehicles with newer technology and better maintained vehicles. Vehicle repair and retrofit would provide an alternative to owners of high emitting vehicles who simply cannot afford a new vehicle by providing subsidies for the installation of an emission upgrade kit (catalyst) designed to reduce the exhaust emissions from automobiles. The emission upgrade kits would be available on a voluntary basis to the “worst polluting” vehicles failing the inspection/maintenance test. A final option would be to recycle the vehicle, which would reduce the total on-road CO emissions inventory.

Because of the relatively larger number of high-emitting vehicles in Arizona compared with most states, a VVERRR program is likely to be more effective in improving air quality in Arizona than in other states. A similar measure has been underway in San Diego County, California since May 1996. The initial results of the San Diego program have been positive.

Implementation Mechanism

A VVERRR program would require the approval of the Arizona Legislature and a one-time appropriation of \$4 million from the General Fund, and would be designed to take into account the experience gained from California’s successful program. The Arizona program would have to incorporate provisions to ensure that vehicles retired under this program had actually been titled, registered, and operable in the nonattainment area for a reasonable period of time, e.g., 24 months. It also would be designed to address concerns voiced in the past—by making it completely voluntary, excluding listed classic cars, salvaging parts, and only recycling vehicles that cannot be repaired or retrofitted with emission control systems.

Vehicle repair and retrofitting would require statutory authority for Maricopa and Pima counties, after competitive bidding, to enter into a contract with a retrofit provider who would subcontract with repair facilities to perform tune-ups, repair exhaust systems, and install emissions upgrade kits. One criterion of the competitive bidding would be demonstration that the proposed retrofit system complied with the EPA Aftermarket Retrofit Device Evaluation Program requirements. The legislation providing program authority also would need to include a provision that defeating or removing the retrofit system would be considered tampering under State law.

Period Required for Implementation

Barriers to Implementation

The major barriers are cost and acceptability to affected vehicle owners and the groups that represent them, as well as groups that rely on the contribution of vehicles as a form of fund raising.

Effectiveness of Measure

The program was modeled by modifying the registration distribution of vehicles from the local fleet of age 12 years and older than the current model year. Given that the projected total CO inventory for the December 16 episode day in the year 2000 is approximately 540 metric tons per day, this measure would result in an estimated reduction of 0.6 percent. This measure would also demonstrate proportionate reductions in VOC and NO_x emissions.

Accuracy of Effectiveness Determination

Effectiveness was determined by studies conducted by outside parties.

Cost of Measure

The cost of a 4,000 vehicle program would be a one-time general fund appropriation of \$4 million. The actual cost of the measure will depend on the options selected by vehicle owners. Three possible scenarios include:

1. All eligible vehicles are recycled and the owners choose the \$1,000 voucher option. If this occurs, then 4,000 vehicles can be recycled.

2. All eligible vehicles are recycled and the owners choose the \$750 cash option. If this occurs, then 5,333 vehicles can be recycled.
3. All eligible vehicles are retrofitted at a cost of \$500 each. If this occurs, then 8,000 vehicles can participate.

For illustrative purposes, utilizing an average cost of \$725/vehicle, the estimated cost effectiveness for CO reductions is \$1,706/ton.

Affected Parties

- # Vehicle owners with vehicles more than 12 years older than the current model year
- # Groups that rely on the contribution of older vehicles as a form of fund raising
- # Owners of high-polluting vehicles
- # ADEQ
- # Repair, retrofit, and recycling contractors

Voluntary Program to Inventory and Evaluate Diesel Equipment and Identify Options for Upgrading/ Replacement of Equipment

This measure applies to the following pollutants: VOCs, NO_x, PM₁₀, HAPs, Urban Haze

Background and Description of Measure

Nonroad diesel equipment represents a significant portion of the total mobile PM₁₀ emissions inventory. This includes items such as construction equipment, material handling equipment, terminal tractors, agricultural equipment and generators. HB 2237 requires the Arizona Department of Environmental Quality to adopt rules for emission standards for certain classes of off-road vehicles and engines marketed in Arizona beginning with the 1999 model year. EPA also finalized emission standards for diesel engines above 50 horsepower in June 1994.

The normal turnover of diesel equipment means that new emission standards affect the overall emission rate gradually, as new equipment is purchased and older pieces are retired. **This measure would establish a voluntary program which encourages businesses and government to inventory and inspect existing diesel equipment. The objective of the inspection would be to identify high emitters which may potentially be replaced or refitted to reduce emissions. By identifying high emitting diesels, owners could target such diesels for accelerated retirement or retrofit.**

Implementation Mechanisms

This measure could be pursued by owners of diesel equipment including business, industry and government organizations. Voluntary targets could be set for diesel equipment retirement/retrofit rates. Regional benefits of this program could be quantified through annual reports submitted by participants. This effort could be coordinated with businesses through the Clean Air 2000 initiative.

Period Required for Implementation

The effort to inventory equipment and accelerate upgrading or replacement could begin immediately.

Barriers to Implementation

The number of firms or government agencies with the budget capacity to accelerate equipment upgrading or replacement may be limited.

Effectiveness of Measure

If this program accelerated the turnover rate of diesel equipment covered by HB 2237 from four percent per year to six percent per year, there would be a reduction of 79 tons of PM₁₀ per year.

Accuracy of Effectiveness Determination

The nonroad equipment inventory used to develop the effectiveness estimate was projected from the EPA 1990 Nonroad Engine and Vehicle Emission Study.

Cost of Measure

The cost of identifying and evaluating high emitting equipment could be offset by the use of more efficient equipment with lower emissions and operating costs.

Affected Parties

- # Business and industry users of diesel equipment.
- # Government users of diesel equipment.

Tiered Incentives Program Based on Emissions Level of Alternative Fueled Vehicles

This measure applies to the following pollutants: VOCs, NO_x, CO, PM₁₀, HAPs, Urban Haze

Background and Description of Measure

The Legislature created the Clean Air Fund (CAF) to provide funding to offset the cost of the alternative fuels program for government entities and encourage the use of alternative fueled vehicles (AFVs) by the general public and private sector. Allowable programs include funding for school district and municipal government vehicles and buses, public access fueling infrastructure grants, and individual/small business fueling infrastructure mini-grants. The CAF is primarily funded through an in lieu emissions inspection program and the state lottery bingo game. Due to statutory obligations and poor revenue performance of the bingo games, the fund is not expected to have revenues for these programs until FY2000.

In November the Department of Commerce hosted a Strategy Session with over 40 private and government sector alternative fuel stakeholders on the CAF and alternative fuels program. Participants reached consensus on five areas that need action and funding to make the overall program viable. The five areas include: additional education and promotion, training for vehicle technicians, reducing cost of fuels, continued funding for infrastructure development and funding for vehicle conversion/purchase. The Department of Commerce has legislative authority to provide grants for government sector vehicles and will do so when the CAF allows, but not for individuals and businesses. Therefore **the Task Force recommends restructuring and enhancing the current AFV tax incentives to be a tiered system that rewards cleaner vehicles.** This would provide a financial incentive to individuals and businesses to utilize AFVs including the conversion of heavy duty diesel equipment to alternative fuels and bi-fuel combinations such as natural gas/diesel combinations (hybrid). The measure proposed mirrors a Colorado legislative initiative utilizing the National Low Emissions Vehicle standards adopted by the Environmental Protection Agency. Tax credits would be allowed based on a percentage of the incremental cost for Low Emission Vehicles (LEV), Inherent/Ultra Low Emission Vehicles (I/ULEV) and Zero Emission Vehicles (ZEV). As structured in Colorado, the first set of incentive levels, lasting three years, is greater than the next set, also lasting three years. The second set of incentives are lower in anticipation of the market place moving toward cleaner vehicles.

Implementation Mechanism

Enact revision to ARS §43-1086, 43-1174, and 49-474.01 to adopt federal emissions system and provide tax incentives for each tier adopted, and to include bi-fuels and hybrid fuels, such as natural gas/diesel combinations. Department of Revenue would administer enhanced tax credit program as they are doing with current tax credit system.

Period Required for Implementation

A statutory revision, if enacted, would likely become effective as of the January 1, 1999 tax year. Department of Revenue would have approximately 18 months to develop internal process and forms necessary to claim credit in the 2000 tax year.

Automobile retailers must be made aware that vehicle title must show proof of certified emissions level for purchaser to claim a credit.

Barriers to Implementation

Additional work for the Department of Revenue for program set up and monitoring, and opposition to the use of tax incentives for this purpose.

Providing incentives for alternative fuels may be viewed as unfair by traditional fuel advocates.

Effectiveness of Measure

Depends on increased participation in the AFV program because of this measure.

Accuracy of Effectiveness Determination

Not applicable.

Cost of Measure

Cost to the state in the form of lost tax revenue. The amount of lost revenue, however, would depend upon voluntary participation which cannot be estimated.

Affected Parties

- # Arizona Department of Revenue
- # Arizona Department of Commerce
- # ADEQ
- # Arizona Citizens and Businesses
- # Automobile Retailers

LEV Standard for Government Alternative Fueled Vehicles

This measure applies to the following pollutants: VOCs, CO, NO_x, PM₁₀, HAPs, Urban Haze

Background and Description of Measure

The current alternative fuel program is composed of two parts - the mandatory government sector purchase or conversion of vehicles to alternative fuels and the tax incentive established to encourage individuals and companies to purchase or convert alternative fueled vehicles (AFVs).

Both components rely on a prescribed list of approved alternative fuels, but does not address or set thresholds for emission levels. In fact, AFVs are only required to meet emission standards for gasoline-fueled vehicles. Therefore, the current program does not ensure that vehicles labeled as AFVs will actually produce emission reductions compared to conventionally fueled vehicles. **The recommended measure is to require government sector AFVs to meet, at a minimum, the EPA's Low Emission Vehicle (LEV) standard.** This will allow government fleets to meet the requirements of the Federal Energy Policy Act.

Implementation Mechanism

Enact revisions on ARS 9-500.04, 14-394, 41-803, and 41-1516.

Period Required for Implementation

Standard would be required as of January 1, 1999. Natural gas, propane, electric and alcohol vehicles are currently available that are certified to meet LEV, emissions levels.

Barriers to Implementation

None identified

Effectiveness of Measure

Data on emission reductions associated with adoption of this recommendation are not available at this time.

Accuracy of Effectiveness Determination

Unknown.

Cost of Measure

Unknown.

Affected Parties

- # State, city/town, school district, and county entities currently mandated to comply with the alternative fuels program.

Adoption of Alternative Fuel Vehicle Conversion Certification Standard

This measure applies to the following pollutants: VOCs, CO, NO_x, PM₁₀, HAPs, Urban Haze

Background and Description of Measure

Aspects of the current state alternative fuel program have become unworkable as originally enacted in 1993. The Department of Commerce is required to provide certification of alternative fuel equipment for tax credit purposes. The Department adopted the California Air Resources Board (CARB) listing of approved alternative fuel conversion kits as the standard for tax credits; however, in 1994 CARB changed its program and now requires certification by individual vehicle type instead of platform groups. This inconsistency has created additional testing expense for vendors and has resulted in a substantially reduced number of vehicles being certified. **The recommended measure is to require that vehicles converted to alternative fuels in the state meet the newly adopted Addendum to Memorandum 1-A issued by the Environmental Protection Agency.** This Memorandum and Addendum establishes aftermarket certification standards which set emission levels from vehicle conversions for the life of the vehicle.

Implementation Mechanism

Amend ARS 41-1516.

Period Required for Implementation

Unknown.

Barriers to Implementation

Additional testing and cost for vendors to satisfy new EPA requirements.

Effectiveness of Measure

Establishes reasonable assurance that conversions will not be more polluting than gasoline vehicles over first 100,000 miles.

Accuracy of Effectiveness Determination

Unknown.

Cost of Measure

Unknown.

Affected Parties

- # Conversion companies
- # Arizona Department of Commerce

INTRODUCTION

The terms “point source” or “stationary point source” refer to a wide variety of commercial and industrial facilities which emit air pollution from an identifiable stack, vent, or other opening. Most point sources are required to obtain air pollution control permits or are otherwise subject to pollution control requirements. Largely due to the long history of controlling point sources and the relative level of point source emissions as compared to other emission sources, such sources are a relatively small contributor to air quality problems in the Maricopa Nonattainment Area. However, there may be additional cost-effective ways of further reducing emissions from these facilities. These measures are intended to identify these additional control measures.

The Task Force recommends the two measures presented on the following pages address emissions from these sources.

- # Establishment of an Air Quality Credit Clearinghouse and Development of an Inter-Source Emission Credit Trading and Banking Program
- # Assess Potential Emissions from Stationary Sources

Establishment of an Air Quality Credit Clearinghouse and Development of an Inter-source Emission Credit Trading and Banking Program

This measure applies to the following pollutants: VOCs, NOx, CO, PM₁₀, Urban Haze

Background and Description of Measure

This measure entails evaluation of market-based trading program such as the National Acid Rain program and the RECLAIM program being implemented in Southern California. Prior to potential implementation of the banking and trading program, an Air Quality Offsets Clearinghouse would be established to provide a mechanism to identify creditable emissions reductions that could be used as offsets for companies requiring such offsets in order to grow. These offsets would be subject to all of the existing new source review requirements for major sources and modifications.

Market-based emission reduction programs have proven to be cost-effective alternative to traditional command-and-control pollution control mechanisms. An inter-source banking and trading program can encourage the retirement of existing pollution sources, while encouraging the implementation of more effective and reliable state-of-the-art controls. Sources which voluntarily make reductions in emissions can bank credits for sale to other companies or to accumulate as offsets for future use. A banking and trading program can also be useful in attracting new industrial development, due to ready access to emissions offsets.

Implementation Mechanism

ADEQ would be responsible for the selection of a qualified contractor to work with Maricopa County and any other appropriate agencies to establish an emissions credit clearinghouse and to research feasibility of implementing an inter-source emission credit trading program within Maricopa County. To do so, the contractor would be required to examine the inventories of sources of these pollutants, review EPA's rule, and examine other market trading programs in development or use in the United States. Based on the results, ADEQ and Maricopa County would initiate development of an emission credit trading program.

Stakeholders would identify a governmental or private institution to manage the Air Quality Offsets Clearinghouse, and develop protocols for creating and certifying offset credits.

Period Required for Implementation

A contractor could be chosen within approximately three months after funding is received. ADEQ estimates that research and the development of a draft report would take approximately four months, followed by two months of stakeholder discussions on the draft report. The total time to develop a proposed rule is estimated at 14 months.

The Air Quality Offsets Clearinghouse will commence operations no later than July 1, 1998.

Barriers to Implementation

Funding for the preparation of the report by a qualified contractor.

Personnel time required to present information to the public regarding the applicability of an inter-source emission credit trading program in Maricopa County.

Public perception that establishing an emissions credits banking and trading program will permit degradation of air quality or raises issues of environmental equity.

Effectiveness of Measure

Because the outcome of this measure is unknown at this time, its effectiveness cannot be projected. However, according to the EPA, the market-trading programs offer states and industry options for meeting requirements of the CAA in the most cost-effective manner. A coalition of northeastern states are considering the use of market trading to address regional ozone reductions. Market trading has been successfully implemented by EPA under the Acid Rain Program, prescribed by Title IV of the CAA.

Accuracy of Effectiveness Determination

Unknown.

Cost of Measure

Costs associated with the consideration of an inter-source emission credit clearing house and subsequent credit trading and banking program would include the costs to hire a contractor to conduct research on the applicability of the inter-source emission credit program to the Maricopa County area. Additional costs

include agency personnel time required to evaluate, present information, and receive comments regarding inter-source emission credit trading program evaluation study. The estimated cost for a contractor is \$150,000 for the necessary research and report preparation. Implementation of this measure will require a General Fund appropriation of \$75,000 and assumes a \$75,000 contribution from the private sector. Once the program is implemented, additional costs would be incurred for staffing and administration of the program however, these should be recouped through service fees.

Affected Parties

- # Maricopa County Environmental Services Department (MCESD)
- # ADEQ
- # Members of the regulated community located within Maricopa County with an interest in market trading
- # New industries planning to locate in Maricopa County

Assess Potential Emissions Reductions from Stationary Sources

This measure applies to the following pollutants: VOCs, HAPs, Urban Haze

Background and Description of Measure

Industrial point sources account for an estimated 4.39 percent of regional emissions of volatile organic compounds (VOCs). While this contribution is small in comparison with other source categories, cost-effective emissions reductions may be possible. ADEQ has prepared an analysis comparing Maricopa County's stationary source rules for controlling VOCs to similar rules in three other jurisdictions. **This measure would require Maricopa County to review the relative contribution of the various industrial source categories to total industrial source VOC emissions and use ADEQ's existing analysis to identify where additional emissions reductions could be achieved from those source categories with the greatest contribution.** In conducting this analysis, Maricopa County would determine whether control technology is available to achieve the potential reduction. Maricopa County would prepare a report on its analysis and findings, which would be made available to the public and reviewed with appropriate stakeholders prior to any new rulemaking.

Measures to be reviewed by Maricopa County will include additional controls for the following:

Potential Source Categories to Evaluate for Further Emission Reductions by Maricopa County

Sources of NO_x:

- Boilers >2 MMBtu/hour
- Boilers >40 MMBtu/hour used in petroleum refineries, and sulfur plant reaction boilers
- Internal combustion engines \geq 50 HP
- Stationary gas turbines > 0.3 MW
- Natural gas fired heaters <75,000 Btu/hour
- Glass melting
- Fan-type residential furnaces
- NO_x from heat transfer operations
- Utility electric power generating systems
- NO_x from boilers and heaters in petroleum industries
- Fuel burning equipment - NO_x
- Steam generating units

Sources of VOCs:

- Solvent cleaning
- Petroleum solvent drycleaning
- Rubber sports ball manufacturing
- Architectural coatings
- Low polluting and zero polluting flat paints (South Coast Rule 1113)
- Graphic arts
- Semiconductor manufacturing
- Vegetable oil extraction processes
- Cutback and emulsified asphalt paving materials
- Metal casting
- Wood products coatings
- Large commercial bread bakeries
- Automotive windshield washer fluid
- Vehicle refinishing
- Coating wood millwork
- Storage of organic liquids at bulk plants and terminals
- Organic liquid loading
- Gasoline delivery vessels
- Transfer of gasoline into stationary storage dispensing tanks
- Surface coating of miscellaneous metal parts and products
- Stage I Vapor Recovery
- Chain-driven charbroilers
- Application of coatings to any plastic, rubber, or glass products

In addition the County should evaluate a requirement to install catalytic oxidizers on chain-driven charbroilers, modeled after a South Coast Air Quality Management District rule. This particular control measure is on the list of the most stringent PM₁₀ control measures in place in any PM₁₀ nonattainment area, as developed by Sierra Research, Inc., for MAG.

In addition, the Task Force recommends that the County evaluate mechanisms for improving the effectiveness of Stage I vapor recovery.

Implementation Mechanism

Maricopa County has determined that it has the capability to conduct the analysis internally.

Period Required for Implementation

Maricopa County has estimated that this analysis could be completed in 180 days, followed by public review and stakeholder discussions where rulemaking is determined to be appropriate.

Barriers to Implementation

Unknown until the additional control measures are identified.

Effectiveness of Measure

Not applicable.

Accuracy of Effectiveness Determination

Not applicable.

Cost of Measure

No additional resources are required to conduct the analysis. Costs to affected industries which may ultimately result from implementation of measures identified in the study cannot be identified at this time.

Affected Parties

- # Maricopa County
- # Industrial point sources of VOCs

INTRODUCTION

The term “area sources” refers to a widely diverse group of relatively small facilities and types of activities which emit air pollution as fugitive emissions or from diffuse sources. Very small businesses, construction sites, fireplaces, unpaved parking lots, and use of consumer products are all examples of area sources. While an individual area source may be small in size, their total number can make them significant contributors to air pollution problems.

The Task Force recommends the 15 measures presented on the following pages to more effectively reduce emissions from these sources.

- # Voluntary Measure to Encourage Use of Temporary Electrical Power at Home Construction Sites
- # Additional Emission Reductions from Consumer Products
- # Strengthening and Better Enforcement of Maricopa County Rule 310
- # State Land Department Dust Abatement and Management Plan
- # Research on Targeted High Pollution Areas
- # Joint Review of 27th Avenue and I-10 Area
- # Plan to Stabilize Unpaved Shoulders on Targeted Arterials
- # Crack Seal Equipment
- # Ban Leaf Blowers
- # Plan to Stabilize Targeted Unpaved Roads
- # Study the Use of Heavier Gasoline Delivery Trucks Within Arizona
- # Clean Burning Fireplace Construction
- # Require Applicants for City Grading and Draining Permits to Demonstrate They Have Obtained County Permits
- # Modify the Existing Solar Energy Tax Credit in ARS 43-1083
- # PM₁₀ Efficient Street Sweeping Task Program

Voluntary Measure to Encourage Use of Temporary Electrical Power at Home Construction Sites

This measure applies to the following pollutants: VOCs, PM₁₀, HAPs

Background and Description of Measure

In this measure the Task Force recommends establishing incentives, and/or voluntary demonstration programs for use of temporary, utility-supplied, electrical power at residential construction sites, in lieu of portable gasoline or diesel generators. Discouraging the use of fuel-fired generators would reduce this source of combustion emissions and noise. Approximately 30,000 new homes are constructed each year in the metropolitan area. Therefore, it is estimated that conversion to temporary power for construction of 4,500 new homes would reduce emissions from this source by approximately 15 percent.

Key features of this measure include:

- # temporary power services are already available in both Arizona Public Service (APS) and Salt River Project (SRP) service areas
- # utilization of existing technology and components for metering and supply connections
- # contractors can eliminate a piece of equipment requiring fuel and maintenance, and which is subject to loss by theft

While Arizona utilities have offered temporary electrical power at construction sites for several years, demand for these services has been relatively low. This is partly because contractors are not well-informed of the cost and convenience advantages of utilizing temporary power. One purpose of higher-power demonstration and incentive programs would be to increase contractor awareness.

This measure is proposed to be voluntary until January 1, 2000, at which time the Executive Branch will review whether the program should continue to be voluntary or whether it should transition to a mandatory program.

Implementation Mechanism

Homebuilders can now request installation of temporary power at construction sites by calling their local utility. To disseminate this information, implementation of this measure would include APS and SRP educational campaigns for homebuilders and contractors. In addition, contractor organizations will have need to educate their members.

Period Required for Implementation

Temporary power can usually be installed within 30 days or less, depending upon availability of electrical service in adjacent areas or streets. Given current resources, APS and SRP can commit to serving about 15 percent of new home construction sites, or 4,500 homes per year in 1993 and 1999.

Barriers to Implementation

As envisioned in this measure, use of temporary utility-supplied power will be voluntary. Since the program is voluntary and is expected to reduce contractor costs, little or no negative impacts are anticipated. Some contractors own portable, fuel-fired generators and may wish to continue using them. At this time, APS and SRP can only commit to service 15 percent of new homes constructed each year. If this measure were mandatory, there would be a need for additional utility resources and lead-time to provide temporary power service to a larger area.

Effectiveness of Measure

The cost effectiveness for each affected pollutant is shown in the following table.

Pollutant	Estimated Annual Reduction (tons/year)	Cost Effectiveness (\$/ton reduced)
CO	1,292	\$348
VOC	29.3	\$15,360
PM ₁₀	1.2	\$374,000

Accuracy of Effectiveness Determination

The emission reduction estimates are based on the net difference between emissions fuel-fired portable generators and emissions resulting from generation of an equivalent amount of electricity by utility power plants. Emission factors for these two sources are well-documented in technical and U.S. EPA literature. Relative costs for temporary electrical power connection and on-site generation will differ depending on the location and size of the site. Such costs are estimated to be less than \$100 per home site.

Cost of Measure

Arizona utilities estimate the cost of temporary power unit and electricity usage to be less than \$100 per home. On the basis of 4,500 homes/year, total private expenditure for this measure would be \$450,000 per year. Direct costs will be borne by homebuilders. Overall costs per home are estimated to be reduced by 50 percent. Overall costs for power supply per home are estimated to be reduced by 50 percent.

Affected Parties

- # Utilities
- # Homebuilders
- # Contractors

Additional Emission Reductions from Consumer Products

This measure applies to the following pollutants: VOCs, Urban Haze

Background and Description of Measure

Consumer products represent approximately 5.6 percent of the Maricopa County Ozone Nonattainment Area emission inventory for VOCs. Currently, the only measure addressing this category is Maricopa County Rule 344, Automotive Windshield Wiper Fluid, which reduces emissions from consumer products by approximately 5 to 6 percent. Further emission reductions may be realized when EPA finalizes its proposed national rule (expected sometime Spring 1998). However, the California Air Resources Board (CARB) has developed a more comprehensive set of regulations limiting emissions from consumer products. The CARB consumer product regulations include the Antiperspirant and Deodorant Regulation, Phase I & II Consumer Products Regulation, Alternative Control Plan Regulation, and its Aerosol Coating Regulation. CARB estimates that these regulations will reduce emissions from consumer products by 30 percent. **The Task Force recommends adoption of California consumer products regulations.**

Implementation Mechanism

To reach 30 percent emission reductions, State law would be amended to provide ADEQ the authority to implement rules paralleling the applicable CARB measures.

Period Required for Implementation

One year to 18 months would be required once program authority is clarified in the state statute to complete the rule adoption process. Approximately one year after rule adoption, products would be required to meet limits established in the rules.

Barriers to Implementation

Lack of clear statutory authority to develop consumer products rules may hinder the program. Enforcement of consumer product rules is very challenging when effective only in one county of the state, especially since

that county is a major distribution point for other areas of the state. Manufacturers may be reluctant to supply complying products when state standards are more stringent than the national rule. This reluctance may be driven by the relatively small share of the national market represented by the county. This type of program is not amenable to user fees, so a funding source would have to be identified to implement the program.

Effectiveness of Measure

Implementing the CARB consumer products program is estimated to result in an additional 10 percent VOC emission reductions beyond the national rule for consumer products which is projecting a 20 percent emission reduction. This additional reduction equates to 2 tons of VOC emissions per day. However, the national rule does not include the windshield wiper fluid limitations already in place in Maricopa County, so the total benefit of this measure to Maricopa County is estimated to be 5 percent or 1 ton per day of VOC emission reductions.

Cost of Measure

In 1993, Sierra Research estimated cost effectiveness for implementing the CARB program in Maricopa County to be \$1,598 per ton. This cost includes 1.5 FTE for administration and enforcement and a separate laboratory contract cost. This portion of the cost totals approximately \$95,000 to \$110,000.

Affected Parties

- # Public
- # Maricopa County
- # Consumer Product Manufacturers and Suppliers

Strengthening and Better Enforcement of Maricopa County Rule 310

This measure applies to the following pollutants: PM₁₀, Urban Haze

Background and Description of Measure

In recommending this measure, the Task Force requests that the Maricopa County Board of Supervisors and the Maricopa County Environmental Services Department (MCESD) consider several actions to increase the effectiveness of Maricopa County Air Pollution Control Regulation - Rule 310. Among these actions are funding for additional enforcement staff, improved staff training, coordination with city and town governments, and strengthening the requirements of Rule 310.

In preparing the Plan for Attainment of the 24-hour PM₁₀ standard, the Arizona Department of Environmental Quality (ADEQ) determined that fugitive dust sources were the major contributors to exceedances of the standard. Since that time, several new particulate control measures have been adopted to help address this source. In September 1994, Maricopa County revised Rule 310 - Open Fugitive Dust Sources which provides control standards for dust sources regionwide. In November 1997, the Board of Supervisors approved two additional inspectors for Rule 310 enforcement. In addition, the County is partnering with cities and towns to identify violations.

MCESD is currently reviewing and clarifying Rule 310 provisions. Workshops are being conducted and a target of Spring 1998 has been set for Board of Supervisor action. Several changes to the existing Rule 310 are being considered including:

- # explicit contractor responsibility for maintaining reasonably available fugitive dust emission control measures on a 24 hour/7 days-a-week basis
- # soil stabilization requirements for both the short and long term
- # a requirement to post signs at construction sites identifying the general contractor responsible for dust control measures, with telephone number(s)
- # posting of signs at construction sites providing the telephone number where public complaints can be reported to the MCESD

The Task Force would specifically request that the Maricopa County Board of Supervisors and MCESD consider the following actions to increase the effectiveness of Rule 310:

- # MCESD should develop specific enforcement effectiveness goals for the expanded dust control program. This will include developing performance measurements to determine the increased effectiveness of specific enforcement measures. The performance measurements may include determining compliance rates, control efficiencies and pounds of pollution reduced per permit issued. MCESD should have a written enforcement strategy and enforcement procedures so that consistency of enforcement may be achieved.
- # Maricopa County should fund a significant increase in the number of inspectors, and other enforcement staff, as detailed in "Cost of Measure" below. In addition to increasing County staff, local governments may fund, on an as-needed basis through an inter-governmental agreement or other mechanism, an inspector or inspectors dedicated to enforcing Rule 310 in that local government's jurisdiction. These new as well as existing personnel should receive additional training in enforcement techniques.
- # The County should investigate options for strengthening of Rule 310 itself. These may include expanding the number of sources covered under Rule 310 and requiring construction projects to provide a mitigation bond that would provide funding for agencies to control project emissions in the event of contractor noncompliance. (Some cities currently have a general bonding requirement which would address this issue as well.)
- # The County also should coordinate with the Department of Water Resources to ensure that GPCD (gallons/capita/day) allocations to the cities or other affected entities are adequate to accomplish the dust control requirements imposed by Rule 310.

Implementation Mechanisms

The implementation mechanism depends upon the nature of the changes (i.e., whether there are changes to Rule 310 or changes to the enforcement practices). County funding will be necessary for additional staff. Rule making will be necessary to revise Rule 310 and to adjust permit fees (Rule 280), if appropriate, to assist in funding this measure. Following new rule making, approval of the Maricopa County Board of Supervisors will be required for funding and amendments to the existing rule.

Period Required for Implementation

The time required to implement this measure, including placing new inspectors in the field is affected by the funding mechanism approved by the Board of Supervisors and subsequent approval of increased expenditure authority for the FY 99 budget. The funding may become available by July 1, 1998. However, the Task Force encourages the Board of Supervisors to consider funding of the new positions immediately but on an interim basis until fee revenues are sufficient to replace County general funds. This will allow the County to be credited with the increased effectiveness of the rule in the March 1998 SIP submission.

Barriers to Implementation

Funding is not currently available. Implementing recommendations to revise Rule 310 and/or the fee structure in Rule 280 will require a formal County rulemaking process.

Effectiveness of Measure

Sierra Research estimates that strengthening and increased enforcement of Rule 310 has the potential to reduce PM₁₀ emissions by 7.72 metric tons per day, at a cost effectiveness of \$213/metric ton of PM₁₀ reduced.

Accuracy of Effectiveness Determination

The effectiveness determination for this measure is based on a significantly increased level of compliance with existing and proposed provisions of Rule 310. Emission reductions are difficult to quantify accurately. The stated daily reductions are based on the typical area of Maricopa County undergoing construction activity, and representative PM₁₀ emission factors. Costs for implementation used to derive cost effectiveness include only the direct costs to MCESD for enforcement staffing.

Cost of Measure

The direct costs of additional MCESD staff to achieve improved enforcement of Rule 310 are:

	<u>Compliance Section</u>
\$450,000	(Includes 1 Supervisor, 5 Inspectors, 2 compliance officers and 1 Clerical)
<u>\$150,000</u>	(Includes 5 vehicles and safety equipment)
\$600,000	TOTAL

In addition to direct costs for staffing, additional costs for compliance with new provisions in revised Rule 310 will be borne by contractors. Costs for compliance enforcement assistance from other cities and towns are not included in this analysis.

Affected Parties

- # Homebuilders
- # Contractors
- # Maricopa County
- # Participating Cities and Towns

State Land Department Dust Abatement and Management Plan

This measure applies to the following pollutants: PM₁₀, Urban Haze

Background and Description of Measure

This measure would implement the Dust Abatement and Management Plan (DAMP) which has been proposed by the Arizona State Land Department (ASLD). The State Land Commissioner states that “it is in the best interest of both public health and the Trust to actively pursue measures to alleviate sources of air pollution.” The proposed Dust Abatement Plan includes direct and indirect measures to control particulate pollution on Trust lands. Reduction in particulate emissions from Trust lands may be significant, since the State Land Department controls 15 percent of the land contained in the PM₁₀ Nonattainment Area.

The direct measures in the DAMP include:

Closing Areas in Maricopa County to Illegal Use by Off-Highway Vehicles - This measure would allow the Department to construct gates and post signs under a “Sign and Lock” Policy. Special areas would be designated specifically for off-highway vehicle use.

Closing Roads which are Unused, Excess or Illegal in Maricopa County - This measure would employ a “Gate and Lock” policy.

Increased Enforcement of No-Trespass Areas - The Department would contract with off-duty law enforcement officers, private companies, or the County Sheriff’s Posse to enforce trespass laws.

The indirect measures in the DAMP include:

Active Dust Abatement and Enforcement Measures on Developing Trust Lands - Future sales and commercial leases would contain an agreement to abide by specific dust abatement procedures.

No New Roads in the Nonattainment Area Without Dust Remediation Measures - New roads would be established on State lands only if they are paved, chip sealed, shoulder sealed, or subjected to some other type of dust stabilizing control.

The above measures will apply to new, non-agricultural lessees and new permittees. The ASLD will seek voluntary dust abatement compliance from current lessees and permittees and agricultural lessees.

Implementation Mechanism

An appropriation from the Arizona Legislature would be required to implement this measure.

Period Required for Implementation

Implementation of the DAMP could be initiated within six months of the State appropriation. With full funding, complete implementation of the particulate control measures in the DAMP could be implemented by 2000.

Barriers to Implementation

Additional funding requirements.

Effectiveness of Measure

Sierra Research estimates that this measure would reduce PM₁₀ emissions by 1.55 metric tons per day in the year 2006. Based on the estimated costs for ASLD administration and for implementing control measures, cost effectiveness ranges from \$430 to \$800 per metric ton of PM₁₀ reduced.

Accuracy of Effectiveness Determination

The effectiveness determination for this measure is based on a significantly increased level of compliance with the Dust Abatement Management Plan as described in this measure. Emission reductions are difficult to quantify accurately. The stated daily reductions are based on the on-road fugitive emissions in a typical rural area of Maricopa County, and the known area of Trust lands. Emission factors (in pounds per mile) for particulate resulting from traffic on unpaved roads are well documented by the U.S. EPA.

Cost of Measure

State Land estimates the following additional funding will be needed to implement the DAMP: First Year One Time Cost: \$203,212; Recurring Annual Costs: \$43,509; including one additional full-time equivalent employee.

Additional private and public costs may be associated with compliance efforts including installation of gates, application of dust palliatives, paving or other measures on new roads. For example, costs for application of most dust suppressants range from \$1,000 to \$9,000 per mile of unpaved road (see measure: "Plan to Stabilize Unpaved Shoulders on Targeted Arterials"). The overall cost effectiveness stated above assumes that average recurring annual costs ranging from \$200,000 to \$400,000 for implementing the control measures.

Affected Parties

- # State Land Department
- # Arizona Legislature
- # Public Using Vehicles on State Land
- # Current and Future State Land Lessees and Permittees

Research on Targeted High Particulate Pollution Areas

This measure applies to the following pollutants: PM₁₀
Urban Haze

Background and Description of Measure

Development of an effective program to reduce particulate emissions and urban haze should be based on tangible data addressing the efficacy of proposed abatement methods. One difficulty in constructing such a program is the scarcity of information for Maricopa County linking specific costs and benefits for particulate control methods. This is especially true for sources of PM_{2.5}, a substantial component of urban haze.

By endorsing this measure, the Task Force recommends that consultant assistance be utilized to develop packages of measures which would reduce emissions in targeted high particulate pollution areas. The State Legislature should identify a lead stakeholder agency, then provide an appropriation or other funding mechanism to initiate this project. The scope of the research contract will include identification of the larger emission sources and evaluation of control measures in areas with high PM₁₀ emissions, and/or ambient concentrations.

The research would build upon the existing knowledge base, using proven techniques. One such research tool is the chemical mass balance (CMB) analysis of filters or other related data collection and analysis in the targeted areas to provide additional information about the contribution of specific particulate sources to ambient concentrations. The research would also evaluate the most effective use of limited funds for control measure strategies. Actual costs for control methods would be quantified. One objective of the study would be to evaluate the relative cost-effectiveness of competing control measures such as increased Rule 310 enforcement, street sweeping, and paving unpaved shoulders and roads, in reducing PM₁₀ pollution in the targeted areas.

Implementation Mechanism

This measure will require legislation to allocate funds. Following legislative action a contract would be awarded to conduct research in targeted high pollution areas and would be managed by ADEQ, the county, or MAG. A technical team of stakeholders would be assembled to help prepare feasible solutions and cost estimates.

Period Required for Implementation

Assuming prompt action to initiate the proposed project, the research could be completed by the end of 1998.

Barriers to Implementation

Competition for available financial and personnel resources could be a barrier in conducting this research.

Effectiveness of Measure

While there are no emission reductions directly associated with this measure, the proposed research will promote effective control measure strategies for reducing emissions. The recommendations will help to ensure that limited public funds are applied in the most effective manner to reduce PM₁₀ and urban haze.

Accuracy of Effectiveness Determination

A primary objective of this research will be to quantify specific costs and benefits of existing and novel control measures and analytical methods. This information will lead to more reliable cost-effectiveness determinations for such measures.

Cost of Measure

It is anticipated that the additional research, including CMB analysis at four sites, would cost approximately \$300,000 and require a general fund appropriation.

Affected Parties

The following are examples of representatives who might be on the technical team of stakeholders:

- # ADOT
- # ADEQ
- # Maricopa County
- # Cities
- # Industries: Rock Products, Trucking, Agriculture

Joint Review of 27th Avenue and I-10 Area

This measure applies to the following pollutants: PM₁₀, Urban Haze

Background and Description of Measure

This measure recommends a joint review of PM₁₀ sources and their impact on air quality in the vicinity of 27th Avenue and I-10. The joint review process would include ADEQ, MAG, the city of Phoenix, Maricopa County, and other stakeholders and interested parties.

The purpose of the review would be to evaluate the feasibility and effectiveness of potential measures to reduce particulate emissions in the area. As part of this review ADOT would study the feasibility and benefits of increased street sweeping activity and would work with the City of Phoenix to develop a coordinated sweeping schedule for the area.

This review process would be coordinated with and benefit from two other recommended measures: Pilot Testing of PM₁₀-Efficient Street Sweeping and Research on Targeted High Pollution Areas. This program could also serve as a prototype for experimental controls in other PM₁₀ problem areas.

Implementation Mechanism

Dedication of budgeted resources by ADOT, a new State appropriation, or other funding mechanism is necessary to initiate this project. ADOT would take the lead in organizing and conducting the joint review. A team of stakeholders would be assembled to participate in the review.

Period Required for Implementation

Assuming prompt action to initiate the proposed project, the joint review could be completed by December 1998.

Barriers to Implementation

Competing priorities for available funds and resources, and availability of participants are possible barriers to implementation.

Effectiveness of Measure

While there are no emission reductions directly associated with this measure, this review will promote effective control measure strategies for reducing emissions. The recommendations will help to ensure that limited public funds are applied in the most effective manner to reduce PM₁₀ and urban haze.

Accuracy of Effectiveness Determination

A primary objective of this review will be to quantify specific costs and benefits of proposed and novel control measures and analytical methods. This information will lead to more reliable cost-effectiveness determinations for such measures.

Cost of Measure

This measure would be funded by ADOT with already budgeted resources.

Affected Parties

The following entities would be represented on the team of stakeholders:

- # ADOT
- # City of Phoenix
- # ADEQ
- # MAG
- # Maricopa County
- # Businesses and other activities located in the area of the monitor

Plan to Stabilize Unpaved Shoulders on Targeted Arterials

This measure applies to the following pollutants: PM₁₀
Urban Haze

Background and Description of Measure

Stabilization of unpaved shoulders reduces the silt which is transferred to the adjacent paved street surface. This reduces the reentrainment of dust by vehicles traveling on the street, which, in turn, lowers ambient PM₁₀ concentrations. Many cities in Maricopa County are already stabilizing their unpaved shoulders.

This measure involves a coordinated effort to develop and implement a plan for stabilizing unpaved shoulders on targeted arterials in the Nonattainment Area. The plan would address expected performance goals, criteria for targeting arterials, a schedule for implementation, funding options and reporting requirements.

In implementing the plan, participants would be given discretion to choose appropriate treatment materials, including chemicals, slurry seal, or other petroleum-based products which is not prohibited for ground surface application by ADEQ, ADWR, or EPA as treatment for controlling dust. Criteria for targeting arterials would include characteristics such as the daily traffic volume and the number of trucks using the facility. The plan would identify an annual stabilization performance goal. Each year participants would report the number of miles stabilized, the frequency of application, and type of treatment.

Implementation Mechanism

Local governments, Maricopa County and ADOT would participate in developing and implementing the unpaved shoulders stabilization plan. The Maricopa Association of Governments could coordinate this effort.

Period Required for Implementation

The Plan could be developed in 1998, with a target implementation date of January 1, 2000.

Barriers to Implementation

Competing priorities for limited resources represent barriers to implementation at the State, County and municipal levels.

Effectiveness of Measure

The impacts of this measure on PM₁₀ concentrations will vary depending upon the number of miles of unpaved shoulders which are stabilized and the type of treatment. This would be reported annually by participants. The table below identifies typical costs and control efficiencies for a sample of palliative products which might be applied to unpaved shoulders.

DUST SUPPRESSANT MATERIAL, COST AND EFFECTIVENESS ESTIMATES*			
Suppressant Product	Composition	Unpaved Shoulder \$/mile^{a,b}	Control Efficiency
"Dustguard"	Salt:MgCl	3,238 ^c	92 percent
"Enduraseal"	Tree Resin Emulsion	17,365	>90 percent
"Road Oyl"	Tree Resin Emulsion	11,616	>90 percent
"DSS-40"	Acrylic Copolymer	5,163	92 percent
"Soil Sement"	Polymer Emulsion ^d	4,459 ^c	85-96 percent
"Coherex PM"	Petroleum Emulsion	5,984	49-99 percent
"EMC Squared"	Biocatalyst Stabilizer	9,269	0-33 percent
"Hydroshield"	Sodium Endosperm Hydrate	1,056 ^c	92 percent
* "Effectiveness Demonstration of Fugitive Dust Control Methods for Public Unpaved Roads and Unpaved Shoulders on Paved Roads", Desert Research Institute, December 31, 1996.			
^a Based on application to both shoulders on a paved road (each shoulder is 10 feet wide).			
^b Includes both the material and application cost.			
^c Application cost was not available, material cost only.			
^d Topical application.			

Accuracy of Effectiveness Determination

Effectiveness of this measure will be determined by the annual reports submitted by participants.

Cost of Measure

The total resources (dollars, manpower, equipment) required to stabilize shoulders on targeted arterials will vary by agency, depending upon the miles of shoulder, frequency of application, and type of treatment. MAG will prepare the plan. Individual local governments will fund the actual implementation of the measure in their respective jurisdictions. In addition, MAG will explore federal, state, and local funding sources to assist in the implementation.

Affected Parties

- # ADOT
- # Maricopa County
- # Local Governments
- # Maricopa Association of Governments

Crack Seal Equipment

This measure applies to the following pollutants: PM₁₀
Urban Haze

Background and Description of Measure

This measure would require that any agency intending to purchase, lease or otherwise contract for crack seal equipment to repair roadways shall be required to procure vacuum systems to remove dust from cracks, rather than air compressor and blower systems. The requirement would pertain to acquisition of new vacuum systems as the existing equipment is retired. This measure would reduce the PM₁₀ attributable to conventional crack sealing operations.

Implementation Mechanism

A Maricopa County rule would be required to implement this measure region-wide. Some cities are already pursuing this measure, which may serve as a model for other agencies with responsibility for crack seal operations, including local governments, Maricopa County and ADOT.

Period Required for Implementation

It will take nine to twelve months for this to be passed as new County rule. Equipment is available to pursue this measure. Funding and delivery may require many months.

Barriers to Implementation

Retirement of existing equipment and replacement with vacuum technology could occur at a slow rate due to competing funding priorities faced by highway maintenance organizations.

Effectiveness of Measure

Sierra Research estimates that this measure would reduce PM₁₀ emissions by .025 metric tons per day, at a cost effectiveness of \$114 per metric ton.

Accuracy of Effectiveness Determination

All emissions and cost estimates developed by Sierra Research are based on current literature and accepted engineering methods.

Cost of Measure

Vacuumsystems for crack seal operations are comparable in cost to the conventional air compressor and blower systems which they will replace.

Affected Parties

- # Maricopa County
- # Local Governments
- # ADOT

Ban Leaf Blowers

This measure applies to the following pollutants: VOCs, PM₁₀, Urban Haze

Background and Description of Measure

This measure would ban the use of all leaf blowers in Area A. Blowers entrain particulate matter at a rate estimated to be five pounds of particulate matter per hour per unit; approximately half of which is PM₁₀. Gas powered blowers also generate VOCs, NO_x, and CO. A ban on all leaf blowers will reduce these emissions, as well as neighborhood noise.

Implementation Mechanisms

The State Legislature should enact this measure into law.

Period Required for Implementation

If the measure were enacted in 1998, it could take effect in 1999 or 2000.

Barriers to Implementation

Lawn maintenance firms will require additional manpower to replace the blowers. This could increase the cost of lawn maintenance to the consumer. However, if the ban were enforced regionally, market conditions would likely limit cost increases. Because of the large number of units currently in use, enforcement may be difficult.

Effectiveness of Measure

Sierra Research estimates that this measure would reduce PM₁₀ emissions by 3.74 metric tons per day (0.008 tons per day per unit), at a cost effectiveness of \$216 per metric ton.

Accuracy of Effectiveness Determination

All emissions and cost estimates developed by Sierra Research are based on current literature and accepted engineering methods.

Cost of Measure

The City of Mesa has estimated that substitute methods to the use of leaf blowers may increase commercial landscape contracts by 15 to 30 percent. In the 1997 Sierra Research report, it was estimated that the cost effectiveness of using vacuums instead of blowers would be \$.09 per pound of PM₁₀ reduced.

Affected Parties

- # Local Governments
- # Lawn Maintenance Companies
- # Public

Plan to Stabilize Targeted Unpaved Roads

This measure applies to the following pollutants: PM₁₀, Urban Haze

Background and Description of Measure

This measure involves development and implementation of a plan to stabilize unpaved roads, including undesignated roads in Area A. In addition, this measure would repeal or modify ARS 28-6705 (Title 28, Chapter 19, Article 1, Section 6705) to allow the use of slurry seal or other petroleum based products on unpaved roads within Maricopa County. The Arizona law which allows lot splitting may also need to be modified to minimize the number of new miles of unpaved roads in Maricopa County.

This measure involves a coordinated effort to develop and implement a plan for stabilizing targeted unpaved roads in the Nonattainment Area. **The plan would address expected performance goals, criteria for targeting unpaved roads to be treated, a schedule for implementation, funding options and reporting requirements.**

In implementing the plan, participants would be given discretion to choose appropriate treatment methods, including use of chemicals, slurry seal or other petroleum-based products which is not prohibited for ground surface application by ADEQ, ADWR, or EPA as a treatment for controlling dust. Criteria for targeting unpaved roads for treatment would be based on characteristics such as daily traffic volume and the number of trucks using the road. The plan would identify annual stabilization performance goals. Each year participants would report the number of miles stabilized and type of stabilization.

Implementation Mechanism

This measure would require the Arizona Legislature to repeal or change the existing Statute prohibiting use of slurry seal and petroleum based products on unpaved roads in Maricopa County. Local governments and Maricopa County would participate in developing and implementing the unpaved roads stabilization plan. The Maricopa Association of Governments could coordinate this effort.

Period Required for Implementation

The State Legislature could amend the law in 1998 and the plan could be developed by the end of 1998, with a target implementation date of January 1, 2000.

Barriers to Implementation

This program will compete with other resource requirements facing the County and local jurisdictions. Use of petroleum based stabilizers may have a negative effect on water quality.

Effectiveness of Measure

The impacts of this measure on PM₁₀ concentrations will vary depending upon the number of miles of unpaved roads which are stabilized, the frequency of application, and the type of treatment. This information would be reported annually by participants. The 1994 PM₁₀ emissions inventory estimates that there are 1,730 miles of unpaved public roads in the Nonattainment Area. The table below identifies the cost and control efficiency of a sample of dust suppressant products which might be applied to unpaved roads.

DUST SUPPRESSANT MATERIAL, COST AND EFFECTIVENESS ESTIMATES*			
Suppressant Product	Composition	Unpaved Road \$/mile^{a,c}	Control Efficiency
"Dustguard"	Salt:MgCl	6,618	92 percent
"Enduraseal"	Tree Resin Emulsion	20,838	>90 percent
"Road Oyl"	Tree Resin Emulsion	10,278	>90 percent
"DSS-40"	Acrylic Copolymer	6,195	92 percent
"Soil Sement"	Polymer Emulsion ^e	6,618	85-96 percent
"Coherex PM"	Petroleum Emulsion	7,744	49-99 percent
"EMC Squared"	Biocatalyst Stabilizer	9,715	0-33 percent
"Hydroshield"	Sodium Endosperm Hydrate	1,267 ^d	92 percent

DUST SUPPRESSANT MATERIAL, COST AND EFFECTIVENESS ESTIMATES*

* "Effectiveness Demonstration of Fugitive Dust Control Methods for Public Unpaved Roads and Unpaved Shoulders on Paved Roads",
Desert Research Institute, December 31, 1996.

^a Based on application to an unpaved road that is 24 feet wide.

^b Based on application to both shoulders on a paved road (each shoulder is 10 feet wide).

^c Includes both the material and application cost.

^d Application cost was not available, material cost only.

^e Topical application.

Accuracy of Effectiveness Determination

Effectiveness of this measure will be determined by the annual reports submitted by participants.

Cost of Measure

The total resources (dollars, manpower, equipment) required to stabilize targeted unpaved roads will vary by agency, depending upon the miles of road, the frequency of application, and the type of treatment. The MAG will prepare the plan. Individual local governments will fund the actual implementation of the measure in their respective jurisdictions. In addition, MAG will explore federal, state, and local funding sources to assist in the implementation.

Affected Parties

- # State Legislature
- # Local Governments
- # Maricopa County
- # Maricopa Association of Governments

Study The Use of Heavier Gasoline Delivery Trucks Within Arizona

This measure applies to the following pollutants: VOCs, CO, PM₁₀, Urban Haze

Background and Description of Measure

This measure would involve a study by ADOT to evaluate the effect upon Arizona roadways of the use of a heavier gasoline delivery truck configuration named the “105.” If the ADOT study concludes that the concept is cost-effective and safety and roadway stress issues are resolved, the Arizona Legislature could consider adopting a resolution urging Congress to delegate authority to the states to allow use of heavier gasoline delivery trucks.

The name “105” is derived from the truck’s weight of 105,000 pounds. While heavier fuel tanker trucks are already used in other western states, including Nevada, Utah, Oregon, and Washington, states are currently precluded by federal law from allowing larger trucks on their respective roadways. Arizona currently allows a trucker tank weight limit of 80,000 pounds. If Congress grants states such authority, further action would be needed to revise the criteria for road-worthy vehicles within Arizona.

Implementation Mechanism

ADOT could conduct a study of the effect of using larger trucks within Arizona. The study would include safety and roadway stress issues. Data on air quality issues could be obtained from ADEQ.

Period Required for Implementation

The ADOT study could begin immediately.

Barriers to Implementation

ADOT may not have available resources and staff time to conduct a study.

Effectiveness of Measure

Conducting a study would have no air quality impacts. If Arizona were to allow heavier trucks, gasoline delivery trucks could travel up to 22 percent fewer miles, according to some estimates. The precise reduction in PM emissions from roadway dust and combustion products would need to be determined. Use of these trucks could also reduce traffic congestion, energy consumption, and delivery costs.

Accuracy of Effectiveness Determination

The reductions in particulates generated from allowing "105" trucks on Arizona roadways are not presently known and there is no independent verification of the reduction in VMT.

Cost of Measure

Minimal costs if the study is conducted by ADOT staff. There would be an undetermined cost if ADOT does not have in-house expertise and would need an outside contractor. The study scope may include costs and benefits of allowing "105" trucks in Arizona.

Affected Parties

- # Arizona trucking industry
- # ADOT
- # Arizona Department of Public Safety
- # ADEQ
- # Maricopa County
- # Local Governments
- # Motorists

Clean Burning Fireplace Construction

This measure applies to the following pollutants: CO, PM₁₀, HAPs, Urban Haze

Background and Description of Measure

State law should be enacted to require clean burning fireplaces for new construction to reduce particulate emissions. On December 3, 1997, the Maricopa Association of Governments approved a Model Clean Burning Fireplace Standard for adoption by reference in local ordinances. The standard applies to both residential and commercial fireplaces, wood stoves, or other solid-fuel burning devices. In general, the clean burning fireplaces include those devices certified by the Environmental Protection Agency or determined to be equivalent by the Maricopa County Air Pollution Control Officer in cities and towns where the ordinance is adopted. Building permits could not be issued to construct or install a fireplace or wood stove unless it is a clean burning device. The effective date for the Model Clean Burning Fireplace Standard is December 31, 1998. To date, the following local jurisdictions have adopted the standard: Gilbert, Phoenix, Scottsdale and Tempe. State law would create a consistent requirement throughout Area A.

If legislation passes requiring clean burning fireplaces in new construction statewide, then state law (A.R.S. 43-1027) should be amended to remove the tax incentive for installation of clean burning fireplaces installed in new homes in Area A. There is no reason to provide a tax incentive for this measure if it is required by legislation.

Whether this measure is handled by state law or by ordinance, the tax incentive for retrofitting clean burning fireplaces in existing homes should be retained. It is also recommended that tax for clean burning fireplaces be converted from an income deduction to a tax credit.

Maricopa County has suggested that this measure include modifying the wood burning restrictions requirements in A.R.S. 11-871 to address perceived inequities resulting from existing statutory language. That is, "no burn" days should apply equally to residences and commercial establishments.

Implementation Mechanism

This measure should be implemented by state law or local ordinances. To date, the following cities have adopted the Model Clean Burning Fireplace Standard: Gilbert, Phoenix, Scottsdale and Tempe. The City of Phoenix has indicated that the Board of Directors for the Homebuilders Association of Central Arizona voted in support of a county-wide ordinance requiring clean burning fireplaces in new construction in May 1996.

Period Required for Implementation

The effective date of the Model Clean Burning Fireplace Standard is December 31, 1998.

Barriers to Implementation

This control measure may increase the cost of construction of new housing units.

Effectiveness of Measure

According to the Arizona Department of Environmental Quality, wood burning can contribute up to 40 percent of the particulate pollution in neighborhoods during the winter temperature inversions. Based upon a study conducted by Sheldon Research and RADCO Labs, conventional fireplaces emit an average of 256 grams per hour of carbon monoxide and 47 grams per hour of particulates.

In July 1990, EPA's Phase II regulation became effective. These regulations required that all wood stoves manufactured and ultimately sold in the United States be EPA - certified and meet the following standards of performance: 4.1 grams per hour of particulate emissions for catalytic appliances and 7.5 grams per hour of particulate emissions for non-catalytic appliances. Generally, replacement of an existing conventional fireplace or wood burning stove with an EPA-approved device would reduce particulate emissions from that device by 84 to 91 percent.

Accuracy of Effectiveness Determination

Based upon EPA performance standards for certified wood burning devices, the replacement of an existing conventional fireplace or wood burning stove with an EPA approved device would reduce particulate emissions from that device by 84 to 91 percent. Since this measure would involve a requirement for clean burning fireplaces for new construction, it is a preventative measure designed to minimize growth in fireplace emissions as the population of the region increases.

Cost of Measure

The costs involved with the Model Clean Burning Fireplace Standard range from \$800 to \$4,000 based upon the type of option selected. The cost for a traditional wood burning fireplace ranges from \$1,000 to \$2,000.

Presently, there is a one time \$500 subtraction from gross income for citizens who purchase and install an EPA certified wood stove, pellet stove, electric or gas fireplace rather than a conventional wood burning fireplace. Based upon the highest tax rate of 5.17 percent, the actual value of this incentive is \$26. If this incentive were converted to a tax credit, the maximum tax rebate would increase to \$500.

Affected Parties

- # Homeowners
- # Homebuilders
- # Wood Burning Device Distributors
- # Maricopa County
- # Cities
- # Towns

Require Applicants for City Grading and Draining Permits to Demonstrate They Have Obtained County Permits

Background and Description of Measure

This measure would require developers or contractors to furnish a copy of the site specific dust control plan and earthmoving permit from the County to local governments as a prerequisite to obtaining a municipal grading, building or demolition permit or to the recording of a final subdivision plat or lot split. (This is already required by several municipalities but needs to be a consistent requirement throughout the County.)

Implementation Mechanism

Local governments would check to ensure that applicants for grading, building or demolition permits or recording of a final subdivision plat or lot split have the appropriate dust control permits from the County. MAG should prepare a uniform model ordinance which could be considered for adoption by local governments.

Period Required for Implementation

Local governments would need one year to revise their permitting procedures and educate constituents concerning the new requirements.

Barriers to Implementation

Local governments may be reluctant to require applicants for grading, building or demolition permits or recording of a final subdivision plat or lot split to show that they have received County dust control plans and earthmoving permits unless other neighboring cities also have this requirement. Otherwise, developers would tend to begin projects in areas without the requirement to the economic disadvantage of municipalities which have adopted the requirement.

Effectiveness of Measure

This measure would provide reinforcement for Rule 310 effectiveness.

Accuracy of Effectiveness Determination

Unable to quantify.

Cost of Measure

None.

Affected Parties

- # Developers
- # Contractors
- # Maricopa County
- # Local Governments

Modify the Existing Solar Energy Tax Credit in ARS 43-1083

This measure applies to the following pollutants: VOCs, CO, PM₁₀, NO_x, HAPs, Urban Haze

Background and Description of Measure

The current solar energy tax credit in 43-1083 is a one-time income tax credit of up to 25 percent of the cost of the purchase of the solar system (up to \$1,000). Given the large initial cost of the equipment; many consumers opt to lease or rent solar equipment rather than purchase it. **This measure would expand the existing solar energy credit to allow a one-time credit of up to 25 percent toward the rental or lease cost of solar energy equipment up to \$1,000.**

Implementation Mechanisms

A statutory change to A.R.S. § 43-1083 would be needed.

Period Required for Implementation

If passed by the legislature, this measure could be implemented in 1998 or 1999.

Barriers to Implementation

May require adoption of rules to implement.

Effectiveness of Measure

Solar energy is generally used to supplement existing energy supplies where it is available, or, alternatively, may be installed where the cost of extending transmission lines is not feasible. In the latter case, highly inefficient portable generators are often used. According to the California Air Resource Board a 4 horsepower general utility generator running 24 hr/day would emit.

HC	=	2 lbs/day
CO	=	94.7 lbs/day
Part	=	0.16 lbs/day
NO _x	=	0.5 lbs/day

Total emission reductions however, would be based on factors such as number of generators eliminated, hours of operation and emissions offset from utility energy production.

PM₁₀ Efficient Street Sweeping Test Program

This measure applies to the following pollutants: PM₁₀, Urban Haze

Background and Description of Measure

EPA does not consider the use of mechanical broom sweepers as a viable option for controlling particulates, because a substantial fraction of the original dust loading is emitted during the sweeping process. **This measure involves conducting a field test of PM₁₀ efficient sweepers in reducing particulate emissions in high PM₁₀ pollution areas.**

The test may include, but would not be limited to, an evaluation of operational parameters such as production rate, water usage (if applicable), transport speeds, and available literature on PM₁₀ efficient sweepers. The test would be conducted in high PM₁₀ concentration areas where a significant source of emissions is vehicle reentrainment. The test would be conducted in coordination with the work underway by the California Air Resources Board (CARB) and the Society of Automotive Engineers (SAE). Generally, Arizona expects to rely on the SAE and CARB testing protocols and technical evaluation of sweeper pick-up efficiencies and PM₁₀ emissions.

The initial PM₁₀ efficient sweepers may be certified in 1998 in response to CARB Rule 1186. Discussions with participants in the South Coast Task Force overseeing development of PM₁₀ efficient sweeper standards indicate that the CARB standards may not be available until 1999. Field testing in Arizona may commence in 1999, if there are no delays in the certification or production process.

Implementation Mechanism

Maricopa Association of Governments has agreed to allocate funds to retain a contractor to coordinate the pilot test assuming voluntary vendor participation (i.e., loan of equipment for testing purposes). (If there is no vendor participation MAG may need to consider more limited testing or the feasibility of adapting the results of the South Coast test program to county-specific conditions.)

Period Required for Implementation

The PM₁₀ efficient sweeper test could be initiated in 1999, if PM₁₀ efficient technology is certified and available.

Barriers to Implementation

No certification procedure or PM₁₀ efficiency standard has been developed. Some of the most promising sweepers are designed for large parking lots and industrial facilities and are not readily adaptable to large municipal operations. Travel speeds, hopper capacity and dumping heights in current equipment are not feasible for municipal use.

Effectiveness of Measure

In the Particulate Control Measure Feasibility Study, 1997, by Sierra Research, PM₁₀ efficient sweepers have a surface silt removal efficiency of 60 percent. However, there have been subsequent indications that the original research may have been flawed and the SAE testing procedure to accurately assess emission reductions is currently being developed.

If equipment becomes available, a targeted use in the areas with the worst problem may have a direct impact. ADEQ's 24 hour PM₁₀ Plan indicates that dust from paved roads contributes approximately 9 percent of PM₁₀ near the Salt River monitor and approximately 36 percent for the region.

Accuracy of Effectiveness Determination

Efficiency estimates will be verified by testing available technologies under typical local conditions.

Cost of Measure

A consultant contract to conduct a sweeper field test is estimated to cost approximately \$70,000. As stated, this cost would be incurred by MAG.

Affected Parties

MAG

INTRODUCTION

Since the first Clean Air Campaign in 1986, the Maricopa Nonattainment Area has shown strong support for public education on air pollution reduction measures. Each year, that Campaign has documented success in changing motorists' behavior and in promoting less-polluting commuting options. More recently, businesses have been asked to go beyond compliance, and they have responded with voluntary participation in the 1996 Clean Air Challenge.

The Task Force supports expansion of these educational and technology transfer activities, and recommends the two measures presented on the following pages to increase their effectiveness.

- # Enhanced Year-Round Clean Air Public Education Campaign
- # Clean Air 2000-Voluntary Business Community Emission Reductions

Enhanced Year-round Clean Air Public Education Campaign

This measure applies to the following pollutants: CO, PM₁₀, Ozone, Urban Haze

Background and Description of Measure

An enhanced Clean Air Campaign is recommended by the Task Force as a necessary component in the effort toward reducing air pollution. **This campaign would address measures that all residents of the Phoenix metropolitan area can take to reduce emissions of carbon monoxide, ozone precursors and particulates and would explain the nature, severity, and public health impacts of Maricopa County's air quality.** A campaign with higher media exposure would expand its scope to promote alternative transportation modes, including carpooling, vanpooling, riding the bus and bicycling; compressed schedules and telecommuting. It would also identify and promote other pollution-reducing measures to the general public, including xeriscape initiatives, fueling after 4 p.m. in the summer and alternatives to wood burning. In addition, the education component for the particulate pollution problem, would target education to the construction, demolition, hauling, and landscaping industries on existing rules and the importance of dust control. The current annual budget of less than \$200,000 is spent on a very modest radio and TV ad campaign, which runs for only a 5-6-week period for a maximum effectiveness during the peak CO season.

In order to achieve air quality goals, education and promotion of measures and actions that individuals can take to be part of the solution is critical. Many of the solutions would involve a change of behavior, and a higher, more visible campaign would educate and encourage people to participate. Research conducted after the new summer ozone campaign clearly showed that the more strategies people are made aware of to help clean the air, the higher the likelihood that they will take action (62 percent of those aware took action). In addition, respondents who do not use an alternative mode to and from work were much more likely to have participated in other pollution reducing measures e.g., fueling after 4 p.m.

A strong component of an enhanced campaign would be to promote telecommuting. This "transportation mode that eliminates vehicle trips" has tripled in Maricopa County in the past three years, and the percentage of the workforce working at home at least one day a week has risen from 2 to 6 percent. With a higher level of promotion both to employers and employees, it is felt that the expansion of this popular new business management tool can be accelerated.

A new incentive called ADOPT, for Arizona Donates Office Products for telecommuting, will be launched this year to provide free recycled PCs to employers that commit to piloting telecommuting. Area employers will be donating old PCs and other partners will refurbish the equipment or transport it. The enhanced campaign can help promote this unique program. A high level marketing effort could be devised to encourage employers to “adopt” the State of Arizona’s goal of having 15 percent of employees telecommute.

The bicycle education component would target large employers and their employees, schools, and their students, and would work with police departments, city planners, and visitors bureaus. The program would encourage more bicycling, provide education on bicycle safety and disseminate information on bicycle facilities and air quality benefits.

This measure would help support the efforts of the 1,300 employers currently participating in the Trip Reduction Program (TRP) to reduce single occupancy vehicle (SOV) trips by their 500,000 employees and students. In addition, this campaign would reach and educate the over 600,000 other commuters not affected by TRP. The non-affected TRP employees comprise about 60 percent of the commute market. They do not receive information on pollution reduction measures, nor are they encouraged to participate except during the Clean Air Campaign’s 5 to 6-week campaign.

The EPA recently issued new guidelines allowing “SIP credit” for voluntary programs like the Clean Air Campaign for up to a 3 percent emission reduction. An enhanced campaign could take advantage of this new credit, because the campaign results are tracked annually and the target audience includes the 60 percent of the commute market not affected by the TRP.

A multi-faceted campaign would be launched with television as the main medium to build the campaign’s reach and frequency. This would be supported with radio, newspaper, signs on transit sides/shelters, and billboards. Corporate executives would also be targeted through direct mailings, management briefings, and business publications. Residents would also be targeted through information provided at community events or expo fairs. Camera-ready materials would also be provided to employers to distribute to employees.

Implementation Mechanism - Clean Air Advisory Committee

- A. Clean Air advisory committee will be established consisting of the following members:
1. The Director of the Department of Environmental Quality or the Director’s designee, who shall serve as chairperson;
 2. Two members of the House of Representatives, appointed by the Speaker of the House of Representatives, who shall not represent the same political party;

3. Two members of the Senate, appointed by the President of the Senate, who shall not represent the same political party;
 4. Six members of the public, two each appointed by the Speaker of the House of Representatives, the President of the Senate and the Governor, with expertise in environmental education, programs to reduce driving use or any combination of experience and knowledge which the appointing official determines to be valuable in providing advice or assistance to the Director of the Department of Environmental Quality regarding the expenditure of their monies.
- B. Public members of the advisory committee serve at the pleasure of the appointing official.
- C. The advisory committee shall review and make recommendations to the Department of Environmental Quality concerning programs established and funded pursuant to this provision.
- D. The Department, after consultation with the advisory committee, shall enter into contracts to conduct biannual program evaluations to determine if the established programs for air quality improvement through education has resulted in positive impacts. The evaluation shall include an evaluation of program outcomes and the cost effectiveness of the program revenues and expenditures. The first evaluation shall be submitted to the Governor, the President of the Senate and the Speaker of the House of Representatives on or before August 31, 1999.

Period Required for Implementation

A campaign, with major emphasis during the CO and particulate pollution months of October through March and high ozone pollution months of June through September.

Barriers to Implementation

Cost of the program.

Effectiveness of Measure

The effectiveness of the summer ozone campaign illustrates the effectiveness of this approach to combating pollution and the need for increased funding levels. The summer ozone campaign was a two-month \$400,000 program compared to under \$200,000 for the whole year for the current Clean Air Campaign. The awareness of the ozone campaign was 77 percent compared to 54 percent for the previous winter's campaign. The ads were effective in communicating the message, with 75 percent of those aware of the

ads able to (unaided) offer a specific message from the commercial. Also, 62 percent of those aware said they took some action in response to the campaign.

It is estimated very conservatively that between 1 percent and 2 percent of daily VMT or between 630,000 and 1.265 million VMT per day could be reduced (within a five-year time frame). This estimate was based on a study done by Apogee Research for U.S. Department of Transportation on the potential mode shift of transportation options.

This projection would mean that the following new mode users would participate at the following frequencies:

New Carpoolers:	4,500 to 8,900	3 days per week;
New Telecommuters:	11,500 to 23,700	2 days per week;
New on CWW:	8,500 to 17,000	1.1 days per week;
New Bicyclists:	800 to 1,600	2.5 days per week

Total New participants: 25,300 to 51,200 1 or more days per week

No calculations have been made for the savings that could accrue for the other pollution reducing measures.

The **pollution reductions and cost per ton of pollution** reduced are in the range of:

	<u>Pounds of Pollution</u>	<u>Tons Reduced</u>	<u>Cost Per Ton Reduced</u>
Daily	25,200 – 50,400	12.6 – 25.2	
Annual	6.42 – 12.85 Million	3,213 – 6,426	\$560 - \$280 / Ton

The breakdown of these emission savings by pollutant is estimated to be as follows:

Tons CO/Year:	2,474-4,948
Tons Particulates/Year:	735-1,471
Tons Ozone Precursors/Year:	160-321

Accuracy of Effectiveness Determination

These estimates of “mode shift” appear to be feasible; however, projecting future participation is difficult. Research indicates that 52 percent of current drive-alone commuters are former alternate mode users and 68 percent of these drivers indicated that they would consider using that mode again.

There is a synergy between all alternate modes of transportation and the participation levels of each. The public education and promotion of all modes and other pollution reducing measures need the benefit of a longer duration campaign with an adequate frequency of public exposure to the message of the campaign.

Market researchers that conduct the annual tracking of participation have indicated that over the years, higher levels of participation were achieved in years when the campaign had a higher level of advertising (received from public service advertising).

Cost of Measure

\$1,800,000 per year through the year 2000. Donations would also be solicited from the private sector. The Task Force recommends that the program be funded by a new vehicle registration fee as presented in the description of the measure titled "Making Vehicle Emissions Programs Self-Supporting".

Affected Parties

- # Employees
- # Student commuters
- # General Public

Clean Air 2000-Voluntary Business Community Emission Reductions

This measure applies to the following pollutants: VOCs, CO, PM₁₀, Urban Haze

Background and Description of Measure

The Task Force recommends a voluntary business community program similar to the “Business for Clean Air Challenge” conducted in 1996-97. Valley businesses, schools, municipalities and other organizations will be encouraged to participate in the program to the year 2000 by initiating additional voluntary activities to reduce air pollution emissions. The program will encourage on-going changes, including pollution prevention efforts, that will result in long term reductions in all three air pollutants for which the Phoenix area is currently designated nonattainment.

Participants will complete a participation agreement that identifies the additional actions they will initiate as their Clean Air 2000 commitment. Program sponsors will provide assistance and education to participants to help them identify high priority areas for improvement and to implement effective alternatives and solutions for air pollution emission reduction. Participants will report their results at the end of 1998 and 1999 to the Clean Air 2000 sponsors, who will summarize the campaign results. Sponsors of Clean Air 2000 include APS, ADEQ, Maricopa County Environmental Services Department, Phoenix Chamber of Commerce, SRP and the Regional Public Transportation Authority.

Implementation Mechanisms

A Clean Air 2000 brochure and cover letter will be sent by the sponsors to over 5,000 Valley organizations inviting them to make the pledge to join this effort. The sponsors will also make personal appeals to top-level employer groups and committees.

Period Required for Implementation

The program will be kicked-off in January 1998 and will last until January 2000.

Barriers to Implementation

None

Effectiveness of Measure

Over 170 Valley organizations joined the Businesses for Clean Air Challenge. Many innovative and successful air emission reduction strategies were implemented by these organizations during this program. However, this program did not include a mechanism for reporting and summarization of results.

The target for Clean Air 2000 is to have over 1,000 organizations join in this effort. Clean Air 2000 will encourage employers to implement actions, including pollution prevention efforts, that have a significant impact on our local air pollution. Among the many possible voluntary actions to improve air quality is encouraging ongoing efforts to use electric ground support equipment at airports. It is difficult to estimate the impact of this measure at this time, but the program will complement other measures and the potential impact is thought to be significant. Clean Air 2000 will include a reporting mechanism to help evaluate the resulting air quality impact.

Accuracy of Effectiveness Determination

No estimates of past or future savings are available.

Cost of Measure

Cost is born by program sponsors and participants on a voluntary basis.

Affected Parties

- # Valley Businesses
- # Schools
- # Municipalities
- # Agencies
- # Other Organizations

Update Ozone Nonattainment Modeling

This measure applies to the following pollutants: Ozone, Urban Haze

Background and Description of Measure

In order to demonstrate attainment of the ozone standard for the Maricopa County nonattainment area, ADEQ must be able to model attainment based on recent and accurate data. Current modeling is based on a single ozone exceedence episode in 1996 and suggests that attainment will only be achieved with about 70 percent reductions in emissions of both NO_x and VOC. Given the potential non-representativeness of the snapshot high ozone event, it is critical that additional ozone episodes be evaluated. This will entail intensive field studies for monitoring surface and upper level meteorological parameters, as well as ozone and all of its precursors (including speciated VOCs) throughout the greater Phoenix area, including the upwind boundaries of the nonattainment area and potential downwind locations, where ozone exceedences are most likely to occur. Without a rigorous evaluation of ozone exceedences, it is possible that adopted control measures may not yield the air quality benefits expected.

Implementation Mechanism

ADEQ would coordinate the design of the field studies, data collection and modeling efforts with EPA and other Federal, State and local agencies in order to leverage additional resources. Existing modeling capability at ADEQ can be utilized and updated to minimize contractor costs.

Period Required for Implementation

Field studies would be conducted in summer of 1998, with inventory development and modeling completed by the end of 1998.

Barriers to Implementation

Negotiation of cooperative agreements among Federal, State and local agencies that would be involved in this effort. Costs for data collection and inventory development could be prohibitive without Federal assistance.

Effectiveness of Measure

Unknown, but critical to SIP submittal and attainment demonstration.

Cost of Measure

Federal costs (to be negotiated).

State and local costs –estimated at \$250,000 and use of existing modeling data collection staff time.

Affected Parties

- # ADEQ, Maricopa County, MAG and EPA
- # All Maricopa County nonattainment area businesses and residents
- # Universities and other participating research institutions

Request the Appointment of a Governor's Task Force to Recommend Policies on Future Growth

This measure applies to the following pollutants: CO, PM₁₀, Ozone, Urban Haze

Background and Description of Measure

Measure: Request the appointment of a Governor's Task Force to develop recommendations for managing urban and rural growth in a manner that contributes to our efforts to protect and preserve air quality. The Task Force will:

- # Review plans and current efforts from various Arizona cities, counties and metropolitan areas (Purpose: many areas have initiated efforts which have not yet been adopted. It is important to consider plans that are currently being developed or amendments which are being developed to improve existing plans.)
- # Review strategies that have been used to address growth related issues from other regions of the United States which have been experiencing air pollution problems (Purpose: growth management applies to a specific approach for planning. Other approaches not specifically termed "growth management" exist to plan for future growth while protecting air quality and maintaining a high quality of life.)
- # Evaluate ways to preserve air quality and current "attainment" status of communities near major metropolitan areas and of rural areas.
- # Assess the feasibility of various measures according to the following criteria: mobility, conservation of natural resources, economics, public health, and equity.
- # Submit recommendations to the Governor on potential policies and legislations to plan for growth while maintaining and enhancing the quality of life, health and welfare of the residents of this state.
- # Examine tax and other policies that affect growth.

Arizona's population growth rate is among the nation's highest. In the last twenty years, the population has grown from 2 million to 4.6 million. At that rate, Arizona's population could exceed 10 million in the next twenty years. Historic growth patterns suggest the bulk of that growth will occur in or around the Phoenix metropolitan area.

Registered vehicles are growing at an even faster rate than is population and there are now three vehicles for every four Arizonans. Vehicle miles are increasing faster still. In 1996, 58 million vehicle miles per

work-day were driven in the Maricopa Region. That figure is expected to increase to 102.2 million by 2020 even with a 67 percent increase in freeway lanes, a 56 percent increase in street miles, and a doubling of bus services (Maricopa Association of Governments Long Range Transportation Plan and 1997 Update).

Arizona's beauty and climate naturally attract new residents. Perceptions of a high quality lifestyle, a growing community, and positive business environment attract commercial and industrial growth. And existing governmental policies and programs seemingly encourage, invite and even subsidize additional growth of virtually any configuration. We invite businesses. We really invite high-tech businesses. We invite Superbowls. We invite winter visitors. We invite summer visitors. We invite tourists. We invite conventions. We invite retirees. We invite immigrants. Seemingly, we invite just about anyone with money to spend or invest.

However, the continuing urban growth has complicated if not confounded our efforts to cure our air quality problems. In asking the EPA to consider deferring the full scope of possible punitive measures, the State Administration has suggested that the significant control measures already adopted would have cured our air quality problems, but for the continuing growth of the community. In effect, that continuing growth effectively keeps "moving the goal posts" with respect to achieving attainment.

Continued growth also threatens air quality in rural areas, or urbanizing areas, which are now in attainment for EPA standards. For example recent modeling results indicate that Apache Junction in Pinal County will suffer reduced air quality from ozone pollution predominantly originating in the metropolitan area.

Of course, unplanned growth has other costs, including loss of natural resources such as the desert environment, the need for schools and infrastructure to accommodate new development while existing infrastructure is underused, and the necessity of expensive treatment of water supplies.

But even from the perspective of air quality alone, residents have recognized the need for a long-term comprehensive strategy that targets "sustainable growth." Successful sustainable growth approach must include resolving our air quality nonattainment problems, and ultimately make the air quality in Arizona a source of pride and not a source of embarrassment with our efforts to ensure a high future quality of life for all residents.

An important effort to build a sustainable future is underway in the Maricopa Region. In 1995, the Maricopa Association of Governments appointed a Blue Ribbon Committee representing various interest throughout the region to recommend an approach to plan for the future of the region. In February of 1997, the Regional Council adopted the Committee's recommendations and initiated the Region 2025 Vision. Region 2025 Vision is a two-year project to develop a plan for the Region in the year 2025. It is led by a 79 member citizen committee representing over 50 regional stakeholder communities.

The MAG effort is based on a solid foundation. The Association completed studies on congestion management and urban form prior to appointing the Blue Ribbon Committee. In 1995 the Association of Governments adopted the Desert Spaces Plan. This plan identifies natural areas throughout the region for no development and sensitive development. Since the adoption of the plan, local jurisdictions, land trusts, and the state and federal government have successfully been working on strategies to implement it. When the plan is fully implemented, a desert green belt around the region will be in place.

Other efforts to address regional growth have also been throughout the state. In late February the Pima County Board of Supervisors were considering holding Town Hall meetings on regional growth issues. Yavapai and Pinal counties are examining ways to address regional growth and the future quality of life.

Implementation of the Measure

The Governor shall appoint a Task Force composed of diverse stakeholders including but not limited to representatives from the following interest areas:

- # The Arizona Department of Environmental Quality
- # local, county and state governments - including both urban and rural areas
- # metropolitan planning organizations and councils of government
- # neighborhood groups
- # agricultural interests
- # transportation
- # real estate and development
- # environmental organizations
- # public health
- # the business community
- # economic development agencies

Period Required for Implementation:

The Task Force shall be appointed by April 1, 1998, and shall report its recommendations to the Governor by December 31, 1998.

Barriers to Implementation

The governor has the authority to appoint a Task Force. Industries which profit from growth may fear potential growth management strategies. Nevertheless, they would be interested stakeholders in the development of recommendations.

Effectiveness of the Measure

Undetermined at this time.

Accuracy of Effectiveness Determination

Not applicable.

Cost of Measure

Unknown.

Affected Parties

- # Residents of the state
- # Builders and contractors
- # Local governments
- # Counties
- # Motorists
- # Councils of Government
- # Metropolitan Planning Organizations

Urge Governor to Take Steps to Resolve Questions Surrounding Issues of Tribal Sovereignty Related to Non-Attainment Status

This measure applies to the following pollutants: CO, PM₁₀, VOCs, Urban Haze

Background and Description of Measure

In light of the amount and location of tribal lands in Maricopa County and the surrounding counties, there is concern that the effectiveness of the measures recommended by the Task Force could be significantly diminished without the participation of the Indian communities. Consistency throughout the nonattainment area will be critical. However, because of the processes set forth in the Clean Air Act for Federal Implementation Plans, State Implementation Plans, and Tribal Implementation Plans, it is unclear how this coordination can occur.

This measure asks the Governor to immediately request a meeting with the Administrator of the Environmental Protection Agency and local tribal leaders, as appropriate, to resolve this issue.

This measure does not suggest action in derogation of the Indian communities' status as sovereign governments. Nor does it suggest that the individual tribes have neglected their responsibilities in the area of air quality improvement. Rather, this measure recognizes the fact that insufficient information exists at this time to adequately address the problem of how to achieve consistency in the implementation of control measures throughout the Maricopa Nonattainment Area.

Implementation Mechanism

This measure would be implemented simply by including it in the Final Report of the Air Quality Strategies Task Force. No formal authority is necessary to make this request to the Governor.

Period for Implementation

This measure could be implemented immediately.

Barriers to Implementation

None.

Effectiveness of Measure

The involvement of the Governor, local tribal leaders, and the EPA Administrator in addressing the issue of Indian sovereignty in relation to the Clean Air Act are crucial to the effectiveness of this measure.

Accuracy of Effectiveness Determination

Not applicable.

Cost of Measure

Not applicable.

Affected Parties

- # All stakeholders in the Valley's air quality issues
- # Local Indian communities

SOURCES AND EFFECTS OF AIR POLLUTION

The purpose of this section is to explain in more detail the three criteria pollutants that were studied in depth by the Task Force (i.e., ozone, CO, and PM₁₀). Hazardous air pollutants (HAPs) and urban haze were not specifically within the Task Force's mandate, but HAP emissions and urban haze are reduced by many of the control measures recommended by the Task Force, and where appropriate that fact has been noted in the analysis.

OZONE

Ozone is a summertime air pollution problem in Phoenix, and is typically a problem from May through September. Ozone is not emitted directly into the air, but is formed when gases called volatile organic compounds (VOCs) and nitrogen oxide (NO_x) react with oxygen in the air in the presence of strong sunlight, heat, and relatively light winds. When NO_x and VOCs are released and have time to "bake," ozone forms and builds to unhealthful levels.

Stratospheric, high-altitude ozone forms a protective layer (the "ozone layer") 10 to 35 miles above the earth to shield us from the sun's harmful ultraviolet rays. Under rare circumstances, stratospheric ozone can be injected into the troposphere, causing increased concentrations of ground-level ozone. This phenomenon is not known to occur in Maricopa County.

Elevated levels of ozone can cause chest pain, coughing, nausea, throat irritation, and congestion. Ozone can damage the lungs, and worsen bronchitis, heart disease, emphysema, and asthma.

Elevated ozone levels have been correlated with increased numbers of hospital admissions and visits to emergency rooms for asthma and other respiratory problems, but otherwise healthy individuals are likely to suffer too. In one study of non-smoking adults living in the Los Angeles basin (an extreme nonattainment area for ozone), the subjects had experienced as much impairment in breathing capacity as that suffered by pack-a-day smokers. When normal, healthy people exercising at a moderate level are exposed to ozone, they experience significantly reduced lung function and inflammation (often with such symptoms as chest pain, congestion, and coughing).

In addition, ground-level ozone may interfere with the production and storage of starches in plants, reducing their growth rates. It also reduces the quality and yield of crops. A 1995 study forecasted that production of lettuce and other leafy vegetables in central Arizona would drop 28 percent during the next several years unless ozone levels are reduced. Ozone reduces the ability of trees and plants to fight disease, and has been shown to damage various tree seedlings.

Researchers also have estimated that nationally, ozone damages automobile tires at a cost of \$14 million per year. Ozone reacts with rubber, damaging it and reducing the life of tires by up to 25 percent.

VOC emissions in the Valley stem from a wide range of vehicular, industrial, and consumer sources and products. VOCs are found in gasoline, household cleaners, grease solvers, polishes, workshop and garden chemicals, lighter fluid, and paint. Gasoline and other petroleum distillates, solvents, glycols, and benzene are all VOCs and contribute to the formation of ozone pollution. Highly reactive VOCs are also produced by certain types of vegetation. Approximately 60 percent of the VOC emissions in the Valley comes from evaporation and combustion of motor fuels, about half of which come from on-road motor vehicles. Figures 1 and 2 are pie charts depicting the sources of VOC and NO_x emissions in the Maricopa County Nonattainment Area in 1996.

NO_x emissions in the Phoenix metropolitan area come primarily from the exhaust of combustion sources such as large industrial boilers, generators, gas-powered mowers and blowers, and of course, motor vehicles. In fact, about 60 percent of the NO_x emissions generated in the Phoenix metropolitan area come from cars and trucks—vehicle traffic.

NO_x plays a dual role in affecting ozone concentrations in that NO_x is necessary to create ozone, but excess NO_x emissions also will destroy ozone. Understanding the precise effect of changes in NO_x emissions on ozone concentrations is difficult because of the complexity of the atmospheric chemical reactions associated with ozone formation and destruction. Reductions in NO_x emissions can lead to decreases or increases in ozone concentrations, depending on the relative concentrations of VOC and NO_x in the atmosphere.

The federal ozone health standard is in a state of transition; EPA recently promulgated a new, eight-hour average ozone standard and has retained the one-hour average standard for all areas that have not yet come into compliance with that standard. Ozone levels that exceeded the one-hour standard of 0.12 ppm have been recorded in the greater Phoenix area nearly every summer since ozone began being measured, with violations recorded as far north as Lake Pleasant, and as far east as Mt. Ord. An analysis of data for 1994 through 1996 shows that the area also would have violated the new, eight-hour standard. (The 1996 maximums measured were 0.14 ppm one-hour average, 17 percent above the one-hour standard; and 0.11 ppm eight-hour average, 63 percent above the eight-hour standard.) In 1997, however, no violations of the one-hour standard were recorded. The detailed analysis conducted by ADEQ in the Reanalysis of the Voluntary Early Ozone Plan shows that background concentrations of ozone, measured at and beyond the boundaries of the metropolitan area, are about one-half of the one-hour average standard. Consequently, metropolitan emission of ozone precursors cause only half of the ozone that exceeds the standards. This and other factors indicate that attainment of both of the ozone standards will be very difficult to achieve.

Figure 1
Sources of Volatile Organic Compounds (VOC)

Metropolitan Phoenix, July 23, 1996

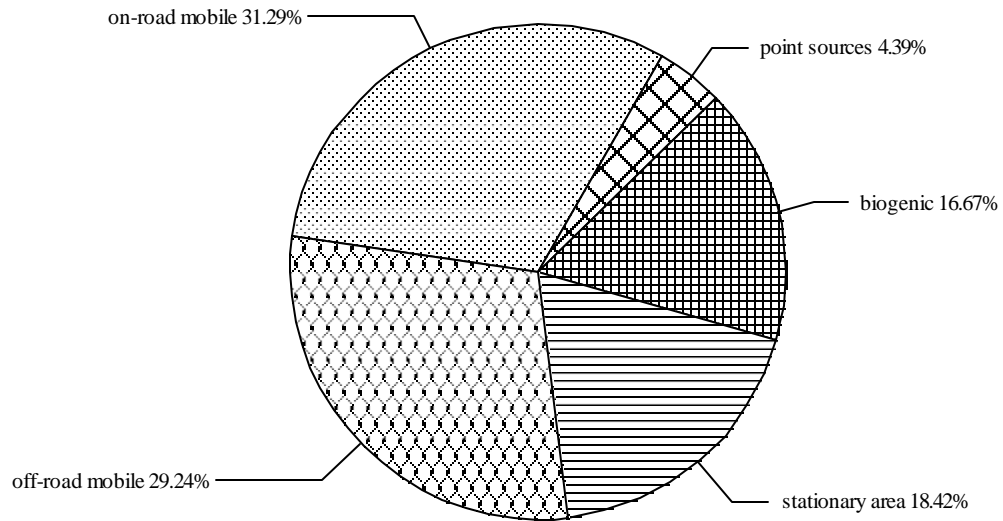
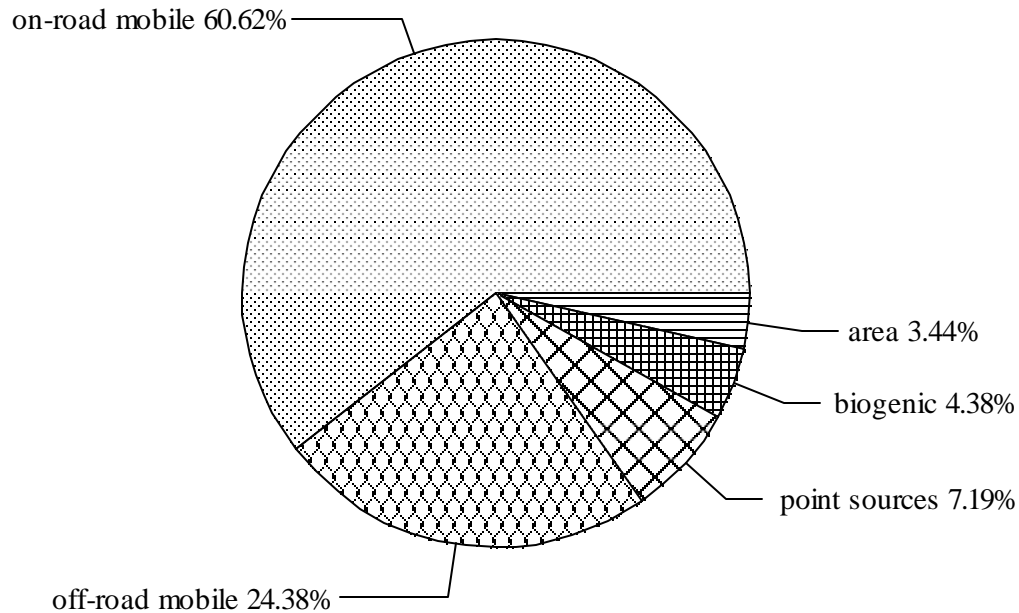


Figure 2
Sources of Nitrogen Oxides (NO_x)
 Metropolitan Phoenix, July 23, 1996



CARBON MONOXIDE

CO is emitted from combustion processes, primarily from the burning of fossil fuels. The sources of CO include motor vehicle exhaust, construction equipment, and lawn and garden equipment, aircraft, locomotives, gas and oil fired boilers, fireplaces, wood stoves, open burning, industrial combustion processes, and electrical power generation. Mobile sources contribute 98 percent of the CO emissions in the Maricopa County non-attainment area: 82.8 percent from on-road mobile sources (cars and trucks); and 15.2 percent from non-road mobile sources (construction equipment, lawnmowers, and other small engines). Figure 3 depicts the sources that contribute to violations of the CO standard.

The federal standard for CO is an eight-hour average of 9.0 parts per million (ppm). Allowing for rounding of fractional readings, an eight-hour average of 9.5 ppm or greater is considered to represent an exceedence of the CO standard. In traffic-congested cities such as the Phoenix metropolitan area, CO

concentrations may exceed 13.2 ppm as a one-hour average, and higher levels often occur along major traffic corridors.

Inhaled, CO does no appreciable harm to the lungs; the impact is on oxygenation of the entire body. CO combines chemically with hemoglobin, the oxygen-transporting element of the blood, to form carboxy-hemoglobin, which cannot carry oxygen to the brain, heart, and other vital organs. In fact, carboxy-hemoglobin binds to hemoglobin with 220 times the tenacity of oxygen itself.

Figure 3

For the otherwise healthy persons, exposure to high levels of ambient CO may mean flagging mental and physical energy, with diminished capacity to perform, as various organs and tissues are denied an adequate supply of oxygen. For a number of specific population groups, including those with certain chronic illnesses, even such nonlethal exposure to CO can have critical impact on their ability to perform daily tasks.

Pregnant women and the elderly also have a greater risk of being impacted by CO exposure. Pregnant women who are deprived of oxygen, by any means, can cause harm to the developing fetus and also has been linked to low birth weight and prematurity. It is therefore sensible to be concerned about the possibility of high CO levels having adverse prenatal impact. Oxygen deprivation can be perilous to the elderly as well. Many elderly people suffer from such chronic ills as heart disease, which affects some six million Americans. CO exposure and concomitant oxygen deprivation compound these difficulties.

PM₁₀

Particulate pollution is composed of solid particles or liquid droplets which are small enough to remain suspended in the air. In general, these particles include dust, soot, and smoke. Particulate emissions are generated by a number of human activities, including:

- # vehicle travel on paved and unpaved roads
- # construction site preparation and other earth moving activities
- # non-road engine exhaust
- # dust from agricultural operations
- # on-road vehicle exhaust
- # wind-blown dust from open and disturbed areas
- # secondary particles, or those formed from sulfur dioxide, nitrogen oxide, and volatile organic compound gases.

Particulate matter pollution, is measured as PM₁₀, the fine, inhalable particles 10 microns in size or smaller. The federal PM₁₀ standard is comprised of a 24-hour average standard of 150 Fg/m³ to protect against short-term, high-level exposures to particulate pollution, and an annual average standard of 50 Fg/m³, to address chronic, low-level exposure.

PM₁₀ differs considerably from ozone and carbon monoxide in that violations of the standards tend to be heavily dominated by local sources. Each location where violations of either the 24-hour or annual average standards have been measured have relatively unique profiles of sources contributing to those violations. Ozone and carbon monoxide violations, by contrast, are dominated by region-wide emissions.

Epidemiological studies indicate that there are increased health risks associated with exposure to fine particulate matter, alone or in combination with other air pollutants. Individuals with cardiovascular or pulmonary disease, especially if they are elderly, are more likely to suffer health effects (i.e., mortality or hospitalization) related to particulate exposure. Children and asthmatics are also more susceptible to effects such as increased respiratory symptoms and decreased lung function. Smokers constitute another population group at increased risk for particulate pollution exposure effects. The smaller the size, the more likely the particulate will reach the innermost portions of the lungs and cause damage.

HAZARDOUS AIR POLLUTANTS

Hazardous air pollutants (HAPs) are gaseous or particulate air contaminants, other than sulfur dioxide, nitrogen dioxide, ozone, CO, PM₁₀, and lead (for which National Ambient Air Quality Standards have been established) that pose a direct threat to human health due to acute or chronic toxicity, including the ability to cause cancer, mutations, or fetal damage.

HAPs are emitted into the air from a wide variety of sources. The principal sources are combustion of fuels in engines and for heating, and uses of solvents and other chemicals. The emissions arise from motor vehicles, industries, businesses, and common household activities. An example of a less obvious source of HAPs is from evaporation of chlorinated hydrocarbons from swimming pools and domestic water. Also, dust from soils and rocks can contain naturally occurring, small amounts of some HAPs (e.g. arsenic).

Effects from HAPs on human health can be acute, meaning that a brief exposure of minutes or hours can cause an effect, such as respiratory dysfunction. They can also be chronic, in which case effects occur after many years of a lifetime of exposure, an example being contracting cancer.

URBAN HAZE

Urban haze, better known as the “brown cloud”, is visible pollution comprised primarily of very fine particulate matter (less than one micron in diameter). The Phoenix metropolitan area is located in the broad, Salt River Valley. The dry air and flat terrain provide pleasing vistas of the mountains lying to the east, north, and south of the urban core, except when weather conditions cause the air to stagnate (which occurs relatively frequently). Stagnant conditions allow pollutants to accumulate relatively close to the ground, and fine particulate matter that is emitted directly into the atmosphere, or forms as secondary particles from gaseous pollutants scatter and absorb light, obscuring these vistas.

ADEQ sponsored the first intensive study of urban haze in 1989 and 1990. The study conducted by the Desert Research Institute reported in *The 1989-90 Phoenix Urban Haze Study, Volume II*, relied on sophisticated measurements of particulate matter collected from the atmosphere at several locations around

the Valley, measurement and characterization of particulate matter from specific sources (primarily residential wood combustion and vehicular exhaust), and direct measurement of light scattering and absorption. This study reveals that the primary source of urban haze is combustion engine exhaust, most of which comes from on-road vehicles. The three major urban haze components that come from vehicular exhaust are primary elemental and organic carbon, oxides of nitrogen, and secondary organic carbon (from VOC gases), nitrate (from oxides of nitrogen) and sulfate (from sulfur dioxide) particles. Nitrate and sulfate occur primarily as ammonium salts, which form when ammonia gas (which has a wide variety of sources, ranging from direct emissions from animals to automobile exhaust) combines with nitrogen dioxide and sulfur dioxide gas in the presence of water vapor. Other sources that contribute to urban haze include residential wood burning, sources of dust from soil (primarily from traffic on paved roads) and emissions from industrial sources. Figure 4 apportions visibility impairment by urban haze to its sources. Even though this study was conducted eight years ago, more recent measurements of particulate in the atmosphere indicate that there has been little change in the types of sources that contribute to urban haze. ADEQ is conducting an ongoing program to measure and characterize visibility impairment and the nature and quantity of particulate that causes urban haze.

Figure 4

Sources of Urban Haze

SOURCES

CARBON

Main: Vehicle Exhaust
50% Diesel / 50% Gas
Other:
Industrial Processes
Wood Combustion
Aircraft, Trains

SECONDARY AEROSOLS

Main: Vehicle Exhaust
Other: Industrial Combustion

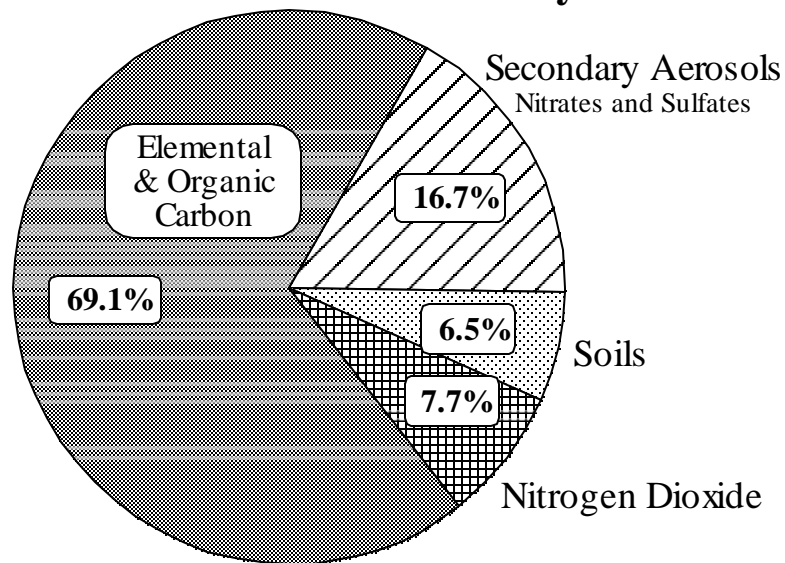
NITROGEN DIOXIDE

Main: Vehicle Exhaust
Other: Industrial Combustion

SOILS

Main: Traffic on Paved and
Unpaved Roads
Other: Construction
Agriculture
Disturbed soils

Phoenix Brown Cloud Study



9/5/91

OTHER RECOMMENDED READING

Final Report to the Governor's Air Quality Strategies Task Force from the Carbon Monoxide Subcommittee. January 20, 1998.

Final Report to the Governor's Air Quality Strategies Task Force from the PM-10 Subcommittee. January 20, 1998.

Report of the Governor's Air Quality Strategies Task Force. December 2, 1996.

Report of the Low Emission Vehicle Subcommittee of the Air Quality Strategies Task Force. January 20, 1998.

Report of the Ozone Subcommittee to the Air Quality Strategies Task Force. January 20, 1998.

The 1989-90 Phoenix Urban Haze Study Final Report Volume II: The Apportionment of Light Extinction to Sources. *Desert Research Institute University of Nevada System.* April 25, 1991.

Report of the Maricopa County Nonattainment Area Fuels Subcommittee of the Air Quality Strategies Task Force. November 26, 1996.

Assessment of Fuel Formulation Options for Maricopa County. MathPro, November 7, 1996.

Evaluation of Gasoline and Diesel Formulation Options for Maricopa County. MathPro, February 14, 1998.

MEASURES NOT RECOMMENDED BY TASK FORCE

MEASURES TO MORE EFFECTIVELY CONTROL EMISSIONS FROM MOBILE SOURCES AND GASOLINE AND DIESEL ENGINES

Bicycle Measures: Bicycle Facilities and Policies

This measure addresses CO, PM₁₀ and Ozone

Name and Description of Measure

Facilities

1. Develop a comprehensive network of bicycle facilities linking the majority of streets in the Valley. The system would be comprised of a variety of bicycle facilities including bike lanes, bike routes and off-street pathways. Bicycles are considered vehicles, held to the same traffic laws as automobiles, but need a designated space to encourage people to ride. The system would be designed to increase use by “casual” cyclists who account for up to 95 percent of bicycle owners.
2. Promote the installation of bike racks and/or lockers at employer sites, park and ride lots and transit areas.

Policies

The following bicycle-friendly policy statements are recommended for adoption by all jurisdictions in Area A:

Provide for bicyclists in transportation projects and programs.

- # Provide for bicycles by including bike lanes when the restriping existing roadways, widening curb lanes during reconstruction or repaving, and on all new public and private roadway projects. (For example, the cities of Tempe, Chandler, Mesa and Tucson have adopted this policy).
- # Promote private, town, city, county and state adoption and adherence to nationally accepted design guidelines and standards.
- # Integrate bicycle friendly improvements into local regional, and state Capital Improvement Programs and Transportation Improvement Programs.

- # Design projects and developments to accommodate support facilities such as bicycle racks/lockers.
- # Promote a comprehensive bicycle facilities network that would include all off-road, paved paths, trails, canals, freeway crossings and on-road bike lanes.

Implementation Mechanism

The legislature would need to allocate \$1 million a year for the next three years to develop more bicycle facilities and procure bike racks. *Those jurisdictions complying with the Regional Bicycle Plan policies would be eligible for the funding.* The program could be administered through the Maricopa Association of Governments Regional Bicycle Committee.

Period Required for Implementation

A three-year funding allocation of \$1 million a year would increase the number of miles of bikeways by about 600 miles by the year 2000.

Barriers to Implementation

Bicycle facility planning would be integrated into the regular, routine practices, policies, programs and procedures by cities. Developers would be required through local jurisdictional policies to include bike lanes, paths and bike parking. The Arizona Department of Transportation would implement bicycle facilities in their projects including bridge widenings, overpasses, interchanges and frontage roads. The cost of the program is also a barrier.

Effectiveness of Measure

This measure can be very effective because it is targeting the largest segment of bicycle owners, the "casual" cyclists. According to O'Neill Associates Market Research for the RPTA, when people were asked if they would ride their bike more often if there were designated lanes, an overwhelming 86 percent responded "yes." Considering that most local vehicle trips are less than 2 miles, by increasing the number of local, personal transportation trips by bicycle, many local automobile trips will be eliminated - trips that tend to be high polluting due to cold starts. If people recognize that they have a safe place to park their bike at every destination, people would also begin to ride to more destinations.

The FHWA in their 1992 study concluded "Even when university towns are excluded from consideration, cities with higher levels of bicycle commuting have an average 70 percent more bikeways per roadway mile and six times more bike lanes per arterial mile." Davis, California, although a university city, has 25 percent of all trips made by bike.

Currently, according to the RPTA survey, 4-6 percent of employees bicycle one day a week. This equates to 3-4 percent of the trips per day. If we take a conservative estimate of 1 percent increase in bicycle usage for work trips would be:

<u>Type Trips</u>	<u>Miles Saved</u>		<u>Pollution Saved/Yr.</u>		<u>Cost per ton</u>
	<u>Day</u>	<u>Year</u>	<u>Pounds</u>	<u>Tons</u>	
+1 percent (work trips)	72,325	18,442,875	737,715	369	\$ 1,890/per ton
20,000 (discretionary- 4 mi/100 days/yr.)	80,000	8,000,000	320,000	160	
	152,325	26,442,875	1,057,715	529	

Accuracy of Effectiveness Determination

These estimates of mode shift appear to be feasible based on Market Research and the Maricopa County Travel Demand Management survey analysis.

Cost of Measure

The proposed allocation of \$1 million dollars per year for the next three years will definitely push this region closer to its goal of being a livable community. This financial commitment would increase the number of facilities and bike racks. A bike rack costs anywhere from \$90.00 - \$250.00 each. The RPTA in the past, has done two bike rack procurement programs for local jurisdictions and employers. The cost of installation would be incumbent upon the entity receiving the rack.

Affected Parties

Arizona Department of Transportation, Maricopa County, local jurisdictions, builders and developers would be required to adopt the above mentioned policies. Developers, commercial real estate, local jurisdictions, shopping centers would provide bicycle racks under the ordinance requirement. Employers and public facilities would receive bike racks through the Bike Rack Procurement program.

Implementation of the National Low Emission Vehicle (NLEV) Program in Arizona

Background and Description of Measure

Motorvehicles are a major source of volatile organic compounds (VOCs), nitrogen oxides (NO_x), carbon monoxide (CO), and particulate matter (PM). The measure addresses adoption of the National Low Emission Vehicle (NLEV) program in Arizona to obtain significant air quality benefits for the Maricopa County nonattainment area, as well as other areas of the State.

On December 16, 1997, the United States Environmental Protection Agency (EPA) signed a Final Rule setting forth the requirements for implementation of the NLEV program. The Final Rule was published in the Federal Register on January 7, 1998. Under NLEV, vehicle manufacturers have agreed to sell LEVs nationwide if the twelve Northeast states plus the District of Columbia (which comprise the Ozone Transport Region) accept the NLEV proposal in lieu of adoption of the California LEV (CA LEV) program. As of January 31, 1998, nine of the required thirteen entities have adopted the NLEV program. Manufacturers had until February 17, 1998, to accept or decline the proposal. By February 6, 1998, six vehicle manufacturers had agreed to participate, representing about 90 percent of vehicle sales in the United States. Vice President Gore and upper EPA management issued statements congratulating the vehicle manufacturers on implementation of this voluntary emissions reduction program. EPA has until March 2, 1998, to declare NLEV in effect.

When implemented in MY 2001, NLEV would be “automatic” in Arizona requiring no action by the state. Vehicles for both the NLEV and CA LEV programs are certified using California Phase 2 reformulated gasoline (RFG); therefore, states using gasoline other than California Phase 2 RFG would have a lower emission reduction benefit.

Under the NLEV program, vehicle manufacturers would sell passenger cars and light duty trucks with a gross vehicle weight rating (GVWR) at or below 6,000 pounds meeting the California vehicle tailpipe emission standards in all states outside of California (except those States that implement the CA LEV program). Additionally, manufacturers are required to comply with a nationwide (except those states implementing the CA LEV program) fleet average non-methane organic gas (NMOG) standard that is equivalent to a 100 percent CA LEV fleet⁵, but is not as stringent as the CA LEV fleet average NMOG standard. EPA is determining the need for more stringent Tier 2 standards for model year 2004 passenger cars and light duty trucks, which could replace the NLEV program. However, the Clean Air Act does not require EPA to promulgate Tier 2 standards.

In deliberations, the Low Emission Vehicle Subcommittee and the Task Force discussed the advantages of the implementation of the NLEV program over the California LEV (CA LEV) program. Even though

⁵ The NLEV fleet average NMOG standard for passenger cars (PCS) and light-duty trucks (LDTs) is 0.075 grams per mile (g/mi). For heavier light-duty trucks (LDT2s), the fleet average NMOG standard is 0.100 g/mi.

NLEV was designed for the northeast states, once all parties agree, NLEV will be a nationwide program that affects all states (except California and other states implementing the CA LEV program). This provides a further emission benefit because vehicles migrating into Arizona from other locations will be low-emission vehicles. No legislative action will be required on the part of Arizona because the program is automatic and there will be no cost to the state to develop a program. Also, EPA Tier 2 rulemaking may provide additional opportunity for adoption of more stringent emission standards for model year 2004 vehicles.

Implementation Mechanism

EPA must finalize the NLEV rulemaking by March 2, 1998. If implemented, the NLEV program would go into effect, beginning model year (MY) 1999 for the states in the Ozone Transport Region and MY 2001 for the rest of the country (except California). If approved, implementation of NLEV in Arizona would be "automatic", requiring no action by Arizona.

It is important to note that if the NLEV program is chosen by the Task Force, but does not get implemented, Arizona would be required to implement the Clean Fuels Fleet Program (CFFP) which requires legislative action for implementation⁶. Based on available information, it was concluded by the Subcommittee that the emission reductions that would be evidenced due to the implementation of the CFFP program would be significantly less than those of CA LEV or NLEV programs. In addition, administration and enforcement of the program has proven to be cumbersome according to other states that have adopted CFFP. Although fleets should have sufficient time to prepare for implementation of CFFP, it is possible that the vehicles may not be competitively priced due to the narrow purchasing market, and there could be limited model selection coupled with a lack of clean fuel availability⁷. For these reasons, there was no support in the Subcommittee for the CFFP.

To implement the NLEV program instead of the CFFP, Arizona is required to perform an equivalency demonstration and apply for a waiver from the EPA.

⁶ The CA LEV program could be implemented with Legislative approval; however, Arizona would need to submit an equivalency determination to EPA for approval in order to opt out of the requirement to implement the CFFP.

⁷ If a gasoline low-emission vehicle is certified on California Air Resources Board (CARB) Phase 2 reformulated gasoline (RFG), the CFFP program requires that these vehicles must be operated on the California fuel in-use. Currently, gasoline suppliers may provide either federal RFG or CARB Phase 2 RFG, which is stored, transported and delivered to Maricopa County as fungible product. The issue of segregation of CARB Phase 2 RFG would need to be addressed if these vehicles were used to comply with the CFFP requirements.

Period Required for Implementation

This program, if approved, would be effective in Arizona for MY 2001.

Barriers to Implementation

- # It is uncertain if this program will be implemented. As of this date, two vehicle manufacturers have agreed to sell LEVs nationwide if the twelve northeast states plus the District of Columbia accept the NLEV proposal in lieu of adoption of the California LEV program. However, it is currently unknown if New York and Massachusetts will replace their current programs (modeled after CA LEV) and accept the NLEV program. One other vehicle manufacturer has agreed to the NLEV program without conditions for participation by all of the northeast states.
- # NLEV does not apply to vehicles over 6,000 pounds gross vehicle weight. This precludes a category of trucks and sport utility vehicles (SUVs) from being included in the potential emission reductions that can be achieved by Arizona.⁸ ADEQ modeling analysis indicate an insignificant emission reduction difference between NLEV and CA LEV as a result of inclusion of trucks in the 6,000 to 14,000 pound GVWR range, several inadequacies of the emission factor model were noted, including the fact that the model is unable to account for model mix changes during future years. This was seen as an important issue because this category of vehicle is a rapidly growing segment of the fleet. Regardless, none of the states that currently have adopted CA LEV programs, including Massachusetts and New York, regulate trucks over 6,000 pounds GVWR.
- # Under NLEV, state and manufacturer commitments last until MY 2006. However, if EPA does not promulgate Tier 2 standards which are at least as stringent as NLEV by December 15, 2000, the state and manufacturer commitments under NLEV last until the 2004 MY. EPA is currently in the process of evaluating the need for more stringent vehicular emission standards and anticipates the release of the draft study in March 1998. If EPA takes no action regarding a Tier 2 program, the Clean Air Act sets default standards for light duty vehicles by the 2004 MY that are more stringent than the Tier 1 requirements but less stringent than the NLEV standards.⁹ This could

⁸ Nationally, in 1987, trucks and SUVs comprised 20 percent of new vehicle sales; current estimates indicate that trucks and SUVs comprise about 43 percent of new vehicle sales. Many trucks and SUVs have a GVWR of less than 6,000 pounds; however, growth in sales of heavier trucks and SUVs will increase fleet-wide emissions because these vehicles are certified to a less stringent emission standard than are lighter vehicles.

⁹ The default Tier 2 standards are required under §202 (I)(3)(E) of the Clean Air Act.

result in a SIP credit shortfall. Practical and policy considerations increase the likelihood that Tier 2 standards more stringent than those for Tier 1 will be promulgated by EPA.

- # Manufacturers can opt-out of the NLEV program if states violate conditions of the NLEV agreements for opt-in. However, opting out would be a difficult process for manufacturers once the NLEV program has begun.

Effectiveness of Measure

Emission reduction estimates for the implementation of the NLEV and CA LEV programs in Arizona were calculated by the Air Improvement Resource, Inc., and verified by Arizona Department of Environmental Quality.¹⁰

As shown in the attached table, by the year 2005, the severe area ozone nonattainment deadline, it is estimated that the implementation of the NLEV program will reduce on-road gasoline vehicular emissions of VOCs by 5.1 percent, NO_x by 6.1 percent, and CO by 9.1 percent. This equates to a reduction of 4.13 metric ton per day (tpd) of VOCs, 9.36 metric tpd of NO_x, and 95.01 metric tpd of CO. By the year 2015, the emission reductions for on-road gasoline vehicles are estimated to be 30 percent for VOCs, 29.3 percent for NO_x, and 38 percent for CO, which equates to 20.13 metric tpd VOCs, 48.72 metric tpd NO_x, and 363.09 metric tpd CO. Additionally, it should be noted that although attainment of the CO standard is expected to be demonstrated, the implementation of this measure will be an important maintenance strategy.

Although a significant decrease in primary PM₁₀ emissions is not anticipated due to the implementation of the CA LEV or NLEV programs, benefits to PM₁₀ and brown cloud pollutants will be observed due to the reduction of NO_x and VOCs, which contribute to the formation of secondary PM.

The attached table compares the emission reduction benefits realized under the NLEV and CA LEV programs. This analysis incorporates the following assumptions:

- # The analysis does not include any reductions associated with the CA LEV II program or the Federal Tier 2 program;
- # The analysis does not include reductions associated with the use of zero emission vehicles (ZEVs) which are included in the CA LEV program, but not NLEV;

¹⁰ ADEQ memorandum from Peter Hyde to Gary Neuroth, January 2, 1998.
Slide presentation by Tom Darlington of Air Improvement Resource, Inc., December 18, 1997.

- # Emission reduction benefits for the CA LEV program were limited to trucks of 8,500 pounds GVWR, while the program is designed to apply to larger trucks with a GVWR equal to or less than 14,000 pounds;
- # The LEV benefits in the NLEV program were applied to trucks of 6,001-8,500 pounds GVWR, although the program is limited to 6,000 pounds GVWR. Analysis by ADEQ indicated that these emission reductions appeared to be insignificant based on limited vehicles in this vehicle category class;
- # The zero-mile emission standards used in the model appear inconsistent with the 50,000 mile standards published by the programs; and
- # The model does not reflect changes in fleet vehicle distribution after the year 2005.

Accuracy of Effectiveness Determination

The emission reductions from the CA LEV program and NLEV program were calculated by AIR, Inc. and verified by ADEQ using the EPA model, MOBILE5a.

Cost of Measure

According to a consultant to the EPA, E.H. Pechan & Associates, the cost per vehicle would range from \$53-\$125, approximately \$20 less than the cost for the CA LEV vehicles. There would be no administrative costs to the state.

Affected Parties

- # Automobile manufacturers
- # Purchasers of new automobiles
- # Automobile dealers

**Comparison of the National (NLEV) and
California (CA LEV) Low-Emission Vehicle Programs**

**Annual Percentage Reduction in Overall Emission Rate (grams/vehicle mile traveled)
for Gasoline On-Road Vehicles**

	National-LEV			California-LEV		
	VOC	CO	NO _x	VOC	CO	NO _x
1996	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0
1999	0.0	0.0	0.0	0.0	0.0	0.0
2000	0.1	0.1	0.0	2.0	0.1	0.0
2001	0.4	0.8	0.7	0.4	0.8	0.7
2002	1.1	2.1	1.3	1.1	2.1	1.3
2003	2.0	3.8	2.4	2.1	3.8	2.4
2004	3.2	5.8	4.0	3.3	5.8	4.0
2005	5.1	9.1	6.1	5.3	9.1	6.1
2006	7.7	12.8	8.8	8.0	12.8	8.8
2007	10.8	16.8	11.9	11.1	16.8	11.9
2008	14.3	21.2	15.2	14.7	21.2	15.2
2009	17.9	25.4	18.5	18.4	25.4	18.5
2010	21.1	29.0	21.5	21.6	29.0	21.5
2011	23.4	31.6	23.7	23.9	31.6	23.7
2012	25.0	33.4	25.3	25.6	33.4	25.3
2013	26.4	34.9	26.7	27.1	34.9	26.7
2014	27.8	36.4	28.0	28.5	36.4	28.0
2015	29.4	37.9	29.3	30.1	37.9	29.3
Avg. (2000 - 15) difference in percent emission rate reduction				0.47	0	0

MORE EFFECTIVE CONTROL OF POINT SOURCE POLLUTION

Maricopa County Mutual Settlement Program

This measure applies to the following pollutants: Ozone, PM₁₀

Background and Description of Measure

Maricopa County Environmental Services Department (MCESD) has historically collected penalties associated with violations of air quality requirements through civil or criminal litigation. A Mutual Settlement Program is a process by which violations are resolved informally. This process affords parties an opportunity to arrive at a mutually desirable resolution without expensive and time consuming litigation.

Since 1981 local air quality districts in California, and more recently Clark County Air Pollution Control Division in Las Vegas, have utilized Mutual Settlement Programs to correct violations and negotiate a settlement. The rationale and justification for these programs is that the majority of violations are nonintentional, nonrecurrent, quickly corrected and should not be resolved through civil or criminal action. By implementing Mutual Settlement Programs a violator is provided the opportunity to negotiate a resolution with District personnel.

MCESD will operate a Mutual Settlement Program following a process substantially similar to the existing programs in California and Nevada. While the actual Mutual Settlement Program will be developed through a stakeholder process, the Department anticipates that the program may be structured as follows:

- # The first notice issued would be designated as a Notice to Correct and would require the person to come into the office for a conference to discuss corrective actions.
- # The second notice would be designated as a Notice of Violation and would require violators to come into the office for settlement negotiations and pay the penalty. Penalties may include a monetary penalty paid to the County, a fee paid to attend a compliance course for the appropriate source or cover additional controls to be applied to the violating site such as chemical dust suppressants.

- # The maximum penalty per violation per day would be \$2000. A maximum penalty would be established for the violator of \$20,000 per site after which the violator would no longer be eligible to participate in mutual settlement.

A Mutual Settlement Program in combination with the other measures proposed to increase the effectiveness of the Stage I Vapor Recovery Program will provide Maricopa County with the tools to reach the 90 percent effectiveness target described in that measure. Additional reductions may be obtained from its application to other VOC rule programs such as solvent cleaning and painting.

Implementation Mechanisms

May require enabling legislation to provide authority for MCESD to implement a Mutual Settlement Program. If legislation is not required, MCESD must establish process guidelines, including categories of violations covered and method of calculating penalties through a stakeholder process and secure personnel resources to operate program.

Period Required for Implementation

MCESD needs six to nine months to develop program guidelines through a stakeholder process, conduct public workshops, and hire and train staff.

Barriers to Implementation

May require revisions to Arizona Revised Statutes. Funding is not currently available

Effectiveness of Measure

Improvements to the enforcement program resulting in consistent equitable application of air quality control regulations will improve compliance rates and decrease emissions by reducing and preventing recurring noncompliance. Rule-effectiveness studies for Stage I and dust control have been at the 50 percent compliance level in recent years. A mutual settlement program could increase these rates substantially with targeted rule-effectiveness levels of 90 percent. Two separate measures have been submitted to the PM₁₀ and Ozone subcommittees showing the potential effects of increased inspections and a mutual settlement program enhancing compliance rates. The ozone reductions would equal 1370 tons per year and the PM₁₀ reductions would equal 3100 tons per year.

Accuracy of Effectiveness Determination

Effectiveness determination is relatively accurate based on Maricopa County rule-effectiveness studies, emissions inventory, and enforcement records that confirm sources operating in compliance and remaining in continuous compliance report lower annual emissions than sources operating out of compliance.

Cost of Measure

Calculations listed in "Effectiveness of Measure" above reveal an annual cost of \$210 per ton for PM10 and \$213 per ton for VOC. Specific costs for the Mutual Settlement Program include three settlement negotiator positions and 1 clerical position and associated supplies and equipment for an estimated cost of \$200,000. The above costs were included in the calculations presented in the measures to improve the effectiveness of the Stage I Vapor Recovery Program and to Strengthening and Better Enforcement of Rule 310.

Affected Parties

MCESD and all sources required to comply with Maricopa County Air Pollution Control Regulations.

MORE EFFECTIVE CONTROL OF AREA SOURCE POLLUTION

Storage of Organic Liquids at Bulk Plants and Terminals

Background and Description of Measure

This measure would reduce VOC emissions from organic liquids storage tanks by setting more stringent standards for certain fixed and floating roof tanks. This control measure would affect some bulk transfer and storage facilities. Some other industries which consume or produce significant amounts of organic liquids may also be affected to some degree.

Emissions from fixed roof tanks include both breathing and working losses. Breathing losses stem from vapor expansion and contraction which result from changes in temperature and barometric pressure. Working losses include the combined emissions from tank filling and emptying. External or internal floating roof tank emission sources may include rim seal, withdrawal, deck fitting, and deck seam losses.

A review of the Draft Bay Area 1997 Clean Air Plan and current rules has resulted in the identification of three provisions which may be considered for additional VOC emission reductions in Maricopa County.

- # Lower the definition of gas tight from 10,000 ppm to 100 ppm for valves, fittings, etc. and to 500 ppm for compressors and pumps.
- # Require control of tank cleaning emissions. South Coast AQMD assumed either carbon adsorption, refrigeration, incineration, or other adsorption technique would be used, and estimated about 3000 pound of VOC reduction per tank cleaning.
- # Require low emitting retrofits for slotted guide poles. Tank vendors and others now offer retrofit kits which can be installed on a tank still in service to reduce fugitive emission of VOC. Conversely, some tank owners would choose to use a solid guide pole rather than a slotted guide pole.

Implementation Mechanism

Maricopa County would have to develop rule revisions to incorporate the proposed provisions for Board of Supervisor consideration.

Period Required for Implementation

Average time for rule development is six to twelve months.

Barriers to Implementation

Effectiveness of Measure

Emission reductions from lowering the gas tight standard for valves, gauges, fittings and pumps and compressor are undetermined. South Coast AQMD estimated about 3000 pounds of VOC reduction per tank cleaning. The number of tanks to be cleaned is undetermined at this time as many large tanks are only cleaned once every 10 years absent a compelling reason such as product changes, mechanical problems, etc. The Bay Area AQMD estimates the emission reductions from each tank retrofitting guide poles to be 100 lb VOC per day per tank based on a 10 mph wind and high vapor pressure gasoline. The number of guide poles which would have to be retrofitted is undetermined at this time.

Accuracy of Effectiveness Determination

Actual emission reductions not yet available

Cost of Measure

Costs of improving the integrity of the equipment to meet the revised gas tight standards is unknown at this time. South Coast estimates the cost of controlling tank degassing emissions to be \$4,000 to \$20,000 per ton depending on the tank size. Bay Area cites data from API (American Petroleum Institute) which suggests that the products loss savings will offset the costs of slotted guide pole retrofit within 2 to 3 years. At a cost of \$6000 per tank to install and maintain, Bay Area calculates the cost of this measure to be \$300 per ton VOC reduced.

Affected Parties

- # Maricopa County
- # Bulk Transfer and Storage Facilities
- # Other industries which consume or produce organic liquids

Transfer of Gasoline into Stationary Storage Dispensing Tanks

Background and Description of Measure

This control measure would reduce VOC emissions from gasoline dispensing facilities by restricting the type of CARB certified systems required for future installations, to require that only vapor recovery systems compatible with the federally-mandated Onboard Refueling Vapor Recovery (ORVR) systems on new cars be used, and to require that P/V valves be installed on non-Stage II facilities.

The proposed method of control entails equipment modifications that will improve the efficiency of the existing vapor recovery equipment. Minor modifications may include:

1. Specifications for the minimum diameter of the vapor tubing between the Phase II riser and dispenser cabinet.
2. Require that only ORVR compatible Phase II systems be installed after a specified date.
3. Require that only vapor recovery systems that have been certified by CARB to meet the following performance specifications be installed after a specified date:
 - a) The emission factor for organic compounds shall not exceed 0.7 pounds/1,000 gallons dispensed. This standard shall apply to the total organic emissions from (1) the nozzle/fillpipe interface, (2) storage tank vent pipes, and (3) pressure-related fugitive emissions, and (4) idle-nozzle emissions.
 - b) The emission factor for spillage shall not exceed 0.42 pounds/1,000 gallons dispensed and the emission factor for pseudo-spillage shall not exceed a specified limit in pounds/1,000 gallons dispensed.
 - c) Requirement that only systems that have met the requirements of Section 3 above, without any maintenance being performed for the 90 days prior to the certification test be approved.
4. Requirement that all storage tank vent pipes, including those on GDF exempt from Stage II, be equipped with a CARB-certified P/V valve. This will maximize the emission reduction benefit of ORVR by eliminating the ingestion of air into the storage tank during vehicle refueling events.

Implementation Mechanism

The proposed modifications are dependent upon actions by the U.S. Environmental Protection Agency (EPA) and proposals presently being considered by CARB. Restricting the type of CARB certified system required after a specified date may require amendment of the Arizona Administrative Code. Maricopa

County would have to complete a rule revision process to implement the p/v valve for non-Stage II facilities.

Period Required for Implementation

The time required for U.S. EPA and CARB actions is unknown. The average time for completing an Arizona rulemaking is 18 months. The average time for completing Maricopa County rules is approximately nine to twelve months.

Barriers to Implementation

Effectiveness of Measure

Not yet calculated. Bay Area AQMD estimates the requirements for ORVR compatibility will, however, prevent an estimated 30 percent increase in emissions from GDFs by the year 2004.

Accuracy of Effectiveness Determination

Actual emission reductions not yet available

Cost of Measure

(Bay Area) The costs of this control measure would be minimal. The modifications required by these proposed changes are relatively inexpensive. The cost of ORVR compatibility may result in higher costs for equipment and components, since the developmental costs will be passed on to the GDF operators. Based on assumptions that would need additional evaluation and verification, Bay Area staff believe that the control cost for these measures would be less than \$1,000 per ton. Individual control costs for the individual proposals will be determined during the rule making process.

Affected Parties

- # Arizona Dept. of Weights and Measures
- # Maricopa County
- # Service Station owners and operators

Dust Palliative Tax Incentive

This measure applies to the following pollutants: PM₁₀

Background and Description of Measure

While contractors would like to use dust palliatives on their construction sites, the cost of the palliatives are currently too high. Offering a tax incentive would be one way of encouraging developers to use palliatives, rather than water, to control construction-related dust.

Implementation Mechanism

The Arizona Legislature would pass a law providing tax incentives to encourage use of palliatives.

Period Required for Implementation

This measure could be addressed by the Legislature during 1998 and could be effective as early as 1999.

Barriers to Implementation

Tax revenues to pay for the incentives will compete with other State projects, programs and services.

Effectiveness of Measure

Since dust suppression activities on construction sites are required as Reasonably Available Control Measures by Rule 310, implementation of the tax incentive would reinforce the control efficiency and compliance rates claimed for Rule 310. (See Measure #1.)

Accuracy of Effectiveness Determination

The effectiveness claimed for Rule 310 represents a maximum theoretical control efficiency of 90 percent and a compliance rate of 90 percent.

Cost of Measure

Costs of the tax incentives for developers would be borne by state taxpayers.

Note: Additional costs to be added.

Affected Parties

- # Homebuilders
- # Contractors
- # ADOT
- # Maricopa County
- # Local Governments
- # Taxpayers

LIST OF CONTROL MEASURES NOT RECOMMENDED BY THE SUBCOMMITTEE, AND NOT APPROVED BY THE TASK FORCE

Particulate Matter

- # Study Feasibility of a Pollution Tax to Fund PM₁₀ Dust Reduction and Incentive Programs
- # Ban Used Oil for Burning
- # Enforce “Maximum Allowable Increases” as Limitations with Regard to All Attainment Area Sources
- # Eliminate Idling of Large Trucks at Truck Stops
- # Water for Dust Suppression to be Paid for ADOT and Local Governments on an As-Needed Basis

Carbon Monoxide Subcommittee

- # High Occupancy Vehicle (HOV) Lane Pricing
- # Minimize Use of Gas-Powered Lawn and Maintenance Equipment by Government Agencies
- # Voluntary Vehicle Repair and Retrofit Program
- # Vehicle Pollution Charge - Vehicle Miles of Travel Tax
- # Replace Vehicle License Tax with a Fuel Tax
- # Commuter Rail Demonstration Project
- # VLT Exemption or Discount for Van Pools or Shuttles
- # Remote Sensing Public Education
- # TRP-Related Parking Cash Out Program
- # Encourage Reduction of High School Student Vehicle Use

Ozone Subcommittee

- # Ban Used Oil for Burning
- # Enforce “Maximum Allowable Increases” As Limitations With Regard to All Attainment Area Sources
- # Provide Tax Incentives for the Purchase and Installation of Oxidation Catalysts on Heavy Duty Diesel Engines
- # Remote Sensing Public Information Program
- # Eliminate Idling of Large Trucks at Truck Stops

Low Emission Vehicle Subcommittee

- # Measures to Encourage the Construction and Operation of Fueling Stations for Alternative Fuel Vehicles

Fuels Subcommittee

- # Adopt Reformulated Fuel Standards: Cleaner Burning Gasoline (CBG) Type I with an Average Sulfur Content of 80 Parts Per Million (G1)
- # Adopt Reformulated Fuel Standards: Baseline EPA Diesel, Cetane Enhanced (+5 Cetane Numbers) (D1)
- # Adopt Reformulated Fuel Standards: Baseline EPA Diesel, 100 Parts Per Million Sulfur (D2)
- # Adopt Reformulated Fuel Standards: CARB Diesel with Formula Properties (D3)
- # Adopt Reformulated Fuel Standards: CARB Diesel with Alternative Formulations (D4)
- # Adopt Reformulated Fuel Standards: Advanced Reformulated Diesel (D5)
- # CARB Gasoline as the Year-Round Gasoline for Maricopa County Commencing in 1999.

APPENDIX A

EXECUTIVE ORDER 97-12

EXECUTIVE ORDER 97-12
GOVERNOR'S 1997-98 AIR QUALITY STRATEGIES TASK FORCE

WHEREAS, healthy air prevents damage to the health of our citizens and enhances their quality of life; and

WHEREAS, the Phoenix metropolitan area has been reclassified to serious nonattainment status for carbon monoxide, particulate matter and ozone by the U.S. Environmental Protection Agency pursuant to the Clean Air Act Amendments of 1990; and

WHEREAS, the area must demonstrate attainment of the ozone standard by 1999, the carbon monoxide standard by 2000, and the particulate standard by 2001, and

WHEREAS, the State is required to submit revisions of the Particulate Matter State Implementation Plan (SIP) by December 10 1997, the Carbon Monoxide SIP by February 28, 1998, and Ozone SIP by December 1998; and

WHEREAS, submittal of complete and approvable carbon monoxide and particulate matter plans to the EPA by the deadlines is not feasible; and

WHEREAS, the Maricopa Association of Governments (NMG) has been working to prepare the carbon monoxide and particulate-related technical analyses necessary to support the identification of potential control measures and their impact on emissions and air quality; and

WHEREAS, the Arizona Department of Environmental Quality has been working to prepare the Reanalysis of the Metropolitan Phoenix Voluntary Early Ozone Plan; and

WHEREAS, the Western Regional Air Partnership is advancing implementation of the recommendation of the Grand Canyon Visibility Transport Commission; and

WHEREAS, the geographic extent of ozone pollution extends beyond the boundaries of Maricopa County; and

WHEREAS, pursuant to Executive Order 96-6, the Air Quality Strategies Task Force was established and fulfilled its mandate to recommend strategies to reduce ozone, carbon monoxide and particulate matter violations; and

WHEREAS, the complexity of the Clean Air Act requirements and the need for new control measures to come in to compliance with the air quality standards necessitate timely action to assist in the evaluation of potential controls and their impacts on air quality and the economy.

NOW THEREFORE, I, Jane Dee Hull, by virtue of the authority vested in me as Governor of the State of Arizona by the Constitution and Laws of the State, do hereby establish the **Governor's 1997-98 Air Quality Strategies Task Force** to:

1. Evaluate the feasibility of and time required for the area to demonstrate attainment of the applicable ozone, carbon monoxide and particulate standards and the consequences of failure to attain.
2. Identify strategies to further reduce violations of carbon monoxide, ozone and particulate matter, considering the interactions between these pollutants and the measure to control them:
 - a) The Task Force shall coordinate with MAG and its contractors to share information and maintain consistency with the MAG planning process.
 - b) The Task Force shall consider all control measures recommended in its December 1996 Report that have not been implemented and all control measure considered, but not recommended.
 - c) The Task Force shall review ozone, PM-10 and carbon monoxide control strategies currently implemented in other areas of the U.S. and evaluate their applicability and feasibility in Arizona.
 - d) The Task Force shall solicit ideas and technologies for reducing pollution from the public, and shall assess the applicability

- b) The Task Force shall consider all control measures recommended in its December 1996 Report that have not been implemented and all control measure considered, but not recommended.
 - c) The Task Force shall review ozone, PM-10 and carbon monoxide control strategies currently implemented in other areas of the U.S. and evaluate their applicability and feasibility in Arizona.
 - d) The Task Force shall solicit ideas and technologies for reducing pollution from the public, and shall assess the applicability and feasibility of technologies evaluated and assessed as having the potential to be effective at reducing emissions by the Technical Assistance Review Committee established pursuant to A.R.S. 49-554.
 - e) The Task Force shall assess the impact of implementation of recommended pollution control measures on those sectors of the economy directly affected and, to the extent feasible, the economy of Maricopa County and the State as a whole.
 - f) The Task Force shall prepare a report to the governor that describes the process and methods used to evaluate potential pollution control strategies, and make recommendations in regard to which control strategies should be implemented, the parties responsible for their implementation, costs and cost-effectiveness, and a procedure for evaluating the control strategies once implemented.
3. If the Task Force determines that achieving attainment by the applicable deadline for a particulate pollutant is not feasible, recommend, if possible, practical and cost-effective approaches to improve air quality. The Task Force should also describe potential institutional or legal changes that might contribute to increasing the feasibility of timely attainment.
 4. Where possible consider the relationship of potential pollution control measures to the recommendations of the Grand Canyon Visibility Transport Commission and related EPA rulemaking.
 5. Solicit and receive comments on these strategies from citizens, governmental agencies and other affected parties, on an ongoing basis and as an official part of each Task Force meeting.
 6. Develop proposals for legislative, regulatory, administrative and local government action. Advocate for and assist in the adoption and implementation of these strategies.
 7. By January 30, 1998, prepare a draft report addressing the topics and issues identified in items 1 through 3, above, and provide a public review and comment period. The final report shall be completed by February 16, 1998.

IN WITNESS WHEREOF, I have
hereunto set my hand and caused to be
affixed the Great Seal of the State of
Arizona.

June Lee Shott
GOVERNOR

DONE at the Capitol in Phoenix this
Thirteenth day of November in the
Year of Our Lord One Thousand Nine
Hundred and Ninety-Seven and of the
Independence of the United States of
America the Two Hundred and
Twenty-First.

ATTEST:

Henry Bayless
Secretary of State

APPENDIX B
MINORITY REPORTS

MINORITY REPORT: CARB DIESEL

On January 28, 1998, the Governor's Air Quality Strategies Task Force approved a recommendation to require the sale of CARB diesel in Maricopa County on a 12-7 vote, with 5 members abstaining. This recommendation fails to meet three basic principles that have been used by the Arizona Legislature to evaluate potential air quality measures: (1) cost effectiveness, (2) sound science, and (3) good public policy. For the reasons stated below, this recommendation should be eliminated from further consideration as an air quality measure.

CARB diesel is not cost-effective. If adopted, it would provide a very small air quality benefit at a huge cost.

Requiring the sale of CARB in Maricopa County would be the most expensive control measure ever adopted. According to MAG, the cost-effectiveness of CARB diesel is \$369,000 per metric ton of PM reduced. For comparison, the EPA's cost-effective threshold for evaluating control measures is approximately \$11,000 per metric ton.

Why would California choose to adopt CARB diesel if it is not cost-effective? When California adopted their regulation ten years ago, the Air Resources Board concluded that CARB diesel would be a cost-effective measure to reduce NOx emissions in 1995. Since that time, advances in diesel engine technology and national changes to diesel fuel, combined with the modernization of the diesel fleet, have significantly reduced the emission reduction potential of further changes to diesel fuel. Furthermore, the NOx reductions associated with CARB diesel may actually increase summer-season ozone in the Phoenix area.

At 14¢ more per gallon, CARB diesel will cost Maricopa County more than \$50 million each year, and affect every diesel fuel user in the county, including small businesses, delivery vehicles and garbage trucks, construction vehicles, farmers, ranchers, miners, ambulances, hospital generators, and state, county and local agencies. The limited supply of CARB diesel will also create supply shortages and price spikes. ***CARB diesel does not provide Maricopa County with a cost-effective option for meeting air quality standards.***

The supporting scientific basis for changing diesel is erroneous in its assumptions and fails to consider advances in technology and fleet modernization.

Diesel vehicles make up a small portion of Phoenix's particulate matter problem. According to the recently approved Maricopa County PM₁₀ Nonattainment Area Inventory, diesel vehicles comprise less than 2.7 percent of total PM₁₀ emissions. ***Requiring the sale of CARB diesel in Maricopa County will reduce less than 1 percent of total PM and NOx emissions -- while costing more than \$50 million each year.***

Some claim that CARB diesel is needed to reduce the exhaust emissions associated with Phoenix's "brown cloud." However, these claims are based on old studies performed in 1989-90 that do not reflect current science or the changes that have been made to diesel engines and fuel. New research being performed in another growing western city indicates that diesel vehicles contribute significantly less to the "brown cloud" than suggested by the older Phoenix studies. If this is the case CARB diesel will have a negligible effect on Phoenix's "brown cloud," although new research is needed to determine the sources that are contributing to this phenomenon.

The Subcommittee's actions are without regard to rational and effective Public Policy.

Good public policy will provide Arizona residents with clean air at the lowest possible price. As shown above, requiring the sale of CARB diesel in Maricopa County is not cost-effective. CARB diesel will also drive business from Maricopa County, diverting millions of dollars in diesel fuel sales to the surrounding counties and states that sell clean EPA fuel at 14¢ per gallon less than CARB diesel -- while providing no air quality benefit to Maricopa County. Just like airplanes, many of the trucks using diesel fuel in Maricopa County do not purchase fuel in the county. Trucks, with their long range, can travel from New York to Arizona on one tank of fuel. A single county diesel fuel does not address this issue and, as a result, has never been attempted. ***The effectiveness of CARB diesel is reduced when trucks purchase clean EPA diesel fuel at lower priced locations outside the county.***

The Solution

Fortunately a big part of the solution to reducing diesel-related emissions has already been adopted by the Arizona Legislature. Senate Bill 1002 (1996) addressed diesel emissions in Maricopa County by:

- C restricting diesel fuel sales to clean EPA low-sulfur diesel for both on- and off-road uses;
- C requiring a more stringent diesel emissions test; and
- C prohibiting the use of diesel vehicles that do not meet 1988 or newer EPA emission standards after 2003.

While these strong measures go a long way toward reducing diesel emissions in Maricopa County, other measures can also provide effective options for reducing diesel emissions. These include:

- C adopting a roadside diesel emissions testing program;
- C requiring diesel fuel quality reporting and testing;
- C developing voluntary programs to accelerate the scrappage of older diesel vehicles; and
- C a new federal clean diesel fuel for use nationally, no exceptions.

Each of the measures adopted by the Legislature met the basic principles discussed above: cost-effectiveness, sound science and good public policy. These measures can be strengthened by developing additional measures that embrace these same basic principles, thereby alleviating the need for costly and ineffective measures such as CARB diesel. In total, a diesel emission reduction program that includes the measures listed above will provide greater emission reductions than CARB diesel and represent the most stringent and cost-effective diesel strategy instituted in the nation.

**Minority Report
to the
Arizona Air Quality Strategies Task Force
regarding
Low Emission Vehicle Program Options**

EXECUTIVE SUMMARY

The National Low Emission Vehicle (NLEV) program has been developing even as the task force has deliberated low emission vehicle programs. For the following reasons the American Automobile Manufacturers Association, the Western States Petroleum Association, Mobil Oil Corporation, the Arizona Farm Bureau, the Central Arizona Home Builders Association, Arizona Rock Products, Swift Transportation, and the Arizona Chamber of Commerce believe that it should be the low emission vehicle program of choice for Arizona:

NLEV will produce essentially the same emission reduction benefits as CA LEV (DEQ analysis shows only 0.5% VOC difference through 2015).

NLEV vehicles will represent over 90% of those sold nationwide beginning as early as the 2001 model year (MY), probably one year sooner than CA LEV could be available to Arizona.

NLEV benefits will be “automatic” to Arizona, as older vehicles are replaced by new ones, requiring no legislative or administrative action on the part of the state.

NLEV does not produce a purchase penalty to out-state residents of Arizona, yet they will still be part of the solution for the non-attainment areas.

NLEV results in substantial benefits to Arizona from winter residents with out of state vehicles as well as the tourists driving into the state.

NLEV is a nationwide program, so that the mass production will still allow for a full range of vehicle availability to Arizona buyers.

NLEV requires no administrative costs to the state, the manufacturers or the dealers which would be necessitated under a CA LEV program to monitor vehicle sales, NMOG fleet averaging and state reporting and enforcement requirements.

DISCUSSION

The Arizona Air Quality Strategies Task Force considered two low emission vehicle program options, the current California Low Emission Vehicle (CA LEV) program and the National Low Emission Vehicle (NLEV) program developed by vehicle manufacturers, states in the Ozone Transport Region and the Environmental Protection Agency. Since the subsequent NLEV commitment guarantees low emission vehicles to Arizona it is now the logical vehicle program choice for Arizona.

Emission Benefits

Because the CA LEV program includes somewhat lower emission limits and additional categories of vehicles (those above 6000 pounds GVWR but less than 14000 pounds), there was a task force perception that CA LEV would achieve greater emission reductions in Arizona. However, analyses by the Arizona Department of Environmental Quality (confirmed by outside consultants) indicated almost no significant differences between the NLEV and CA LEV. Emission benefits for NLEV VOC reductions through 2015 are about 0.5% less, with no difference for CO and NO_x. These small benefit differences are consistent with analyses conducted by the states in the OTR.

Availability of NLEV

At the initiation of the Task Force deliberations, the voluntary NLEV program was not finalized. However, NLEV has now been adopted by eight states and the District of Columbia, and eleven vehicle manufacturers, representing over 90 percent of U.S. vehicle sales. These manufacturers have agreed voluntarily to provide low emission vehicles nationwide when EPA finds the program in-effect. Further, at least two states that had previously adopted CA LEV programs have now endorsed NLEV instead. As an example of their rationale, in a letter to the EPA, Delaware stated, "Delaware believes that National LEV will achieve reductions of VOC and NO_x emissions that are equivalent to or greater than the reductions that would be achieved through OTC State adoption of California Low Emission Vehicle programs in the Ozone Transport Region."

NLEV would begin in the northeast in the 1999 MY, and would be implemented nationwide in the 2001 MY. EPA has until March 2, 1998, to declare NLEV in effect, thus qualifying this nationwide vehicle emission control program for SIP benefits. A CA LEV program could not be implemented in Arizona before the 2001 MY, and probably not until the 2002 MY, under provisions of the Clean Air Act, thus offers no timing advantage over NLEV.

NLEV - A Nationwide Program

NLEV is a nationwide program, similar to previous federal vehicle emission requirements enforced by EPA. A nationwide low emission vehicle program will lead to reduced emissions in Arizona, because cleaner vehicles will migrate to Arizona from other states and because the lower costs of a nationwide vehicle program will help accelerate the replacement of older, higher emitting vehicles in the current on-road vehicle fleet in Arizona. The emission benefits related to migration and to fleet turnover are projected to more than offset the more stringent emission limits and inclusion of heavier vehicles in the CA LEV program.

Program Costs

Vehicles meeting CA LEV requirements are anticipated to cost more than those produced in compliance with a nationwide NLEV program; current estimates of the cost differential were cited in the Task Force report. In addition, the NLEV program eliminates the administrative costs necessary for CA LEV, thus minimizing the cost burden to all residents of Arizona. Inclusion of the heavier vehicles (between 6,000 and 14,000 pounds GVWR) will require additional administrative infrastructure, thus increasing the administrative burden to Arizona. It should be noted that none of the states that have implemented CA LEV have included provisions for vehicles with GVWR greater than 6000 pounds. Because of the different program requirements, adoption of the CA LEV program by Arizona will bring restrictions on cross-border sales and dealer trades, and will make vehicle service and repair more complex. These additional burdens will also increase the costs of implementation of the CA LEV program and are not offset by environmental benefits.

FUTURE EMISSION LIMITS

Emission control requirements for future vehicles, either nationally or in California, are likely to become more stringent. California is considering modifications to their low emission vehicle program, possibly to become effective in the 2004 MY. Nationally, EPA is required to consider new Tier 2 vehicle emission limits, also targeted for implementation in the 2004 MY. Thus, there is a high probability that Arizona would have available lower-emitting vehicles in 2004 MY than now offered by either CA LEV or NLEV. Should Arizona determine at a later date that NLEV or Tier 2 emission limits are not sufficient for Arizona air quality needs, the option to adopt other programs would still be available without loss of implementation timing or a reduction of emission benefits.

SUMMARY

Adoption of either CA LEV or NLEV will provide significant benefits in achieving the air quality standards in the Phoenix Metropolitan Area. Both low emission vehicle programs will benefit equally from the cleaner burning gasoline programs adopted by Arizona. However, we respectfully submit that the emission reductions available, lower vehicle costs, lack of administrative burden, emission reduction benefits related to migrating vehicles, and the certainty of NLEV implementation make NLEV the superior low emission vehicle program choice for the residents of Arizona.

This report is submitted on behalf of the Task Force members listed on the attached signature page.